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IX—EUPHORBIA (DIACANTHIUM) DEIGHTONII, A NEW SUCCULENT FROM WEST AFRICA, WITH BRIEF NOTES ON SOME ALLIED SPECIES.

LEON CROIZAT (U.S.A.)

In the latter part of 1933 the writer had the pleasure of entering into correspondence with Mr. F. C. Deighton, Mycologist in the Department of Agriculture, Njala, Sierra Leone. Knowing that the writer was interested in *Euphorbia*, Mr. Deighton suggested that the investigation of a succulent bush believed to be *E. kamerunica* Pax might profitably be undertaken. The binomial—Mr. Deighton felt—might be misplaced for the plant of Sierra Leone.

From 1934 to 1936 several samples, at first fragmentary, and two live-rooted cuttings were sent to the writer. Upon this material, as will be later said, *E. Deightonii* is proposed. The specific name honours the discoverer of the new species.

E. kamerunica holds in the flora of West Tropical Africa precisely the place taken by *E. abyssinica* G. F. Gmel. in the flora of East Tropical Africa. There exists in the literature a well defined tendency to reduce to these two species whatever doubtful or imperfectly known material is collected in the supposed specific range. *Elaeophorbia drupifera* Stapf*, one may add, is another West African *Euphorbiacea* that embraces more than the binomial of Stapf truly appears to warrant.

Under the circumstances the writer feels to have some justification if he gives an extended account of what he was able to learn of *E. kamerunica* and allied species. Certain data irrelevant to the strict title of the publication may later be found useful by investigators bent on analyzing critically the species in the group. It is plain that numerous succulent kinds of *Euphorbia*, African, Asiatic and American, beg investigation.

The description of *E. kamerunica* (Engl. Bot. Jahrb. **34, 75** : 1905) is very brief. The diagnostic summary ends with the note that its cyathia are subsessile, in the Latin description *paullo supra podaria glomerulati*. N. E. Brown describes the inflorescence of the type (Fl. Tr. Afr. **6,** pt. 1, 586 : 1912) as follows: "Involucres 5–7 together, in a dense cluster, on peduncles [branches of subsessile cyme] 1–1½ lin. long."

* Needless to say, the writer rejects the concept of modern French taxonomists who maintain the species under *Euphorbia*. Their interpretation agrees, however, with the strict Linnean notion of the genus (*cf.* Baillon in Adans. **3,** 144, 1863).

A. Chevalier interprets Pax's species (Rev. Bot. Appl. Agr. Trop. **13,** 566 : 1933) in these words, so far as the cyme is concerned : " Cyathia 4–6 mm. broad, borne singly or in 2's or 3's upon glabrous, fairly thick pedicels 3 mm. long ; bracts short, thick, carnose, glabrous." This description gives evidence of being made from two specimens (1, Dalaba, *Chevalier* sine numero ; 2, between Irebeleya and Kouria, *Chevalier* 18248), three other specimens being sterile from textual inference.

Also, as *E. kamerunica* Chevalier accepts (op. cit., 567) " a large cactus-like aphyllous *Euphorbia,* planted as fetish in the majority of the villages of the Ivory Coast, within the forest, or near it." A specimen growing at Tiebissou is described by him (l.c.) as follows : " the lowest branches reach down to the ground and become buried therein, giving birth to an erect branching stem. This in turn branches out, the plant eventually bearing a likeness to *Ficus religiosa* . . . Each one of the 1–3 peduncles [*in each cyme*] supports 2 pedicelled cyathia, monoecious, male and female, glabrous. The pedicels measure 5 mm."

Brief diagnostic notes on Pax's species, *sensu clar. auct.,* are contributed by Hutchinson & Dalziel (Fl. W. Trop. Afr. **1,** pt. 2 : 313 : 1928), by Irvine (with question mark, Pl. Gold. Coast, 191 : 1930) and by writers whose works, implicitly or admittedly, are devoted to the furtherance of forestal lore rather than to taxonomy. Chevalier, Hutchinson & Dalziel, and Irvine, accept *E. Barteri* as the synonym of *E. kamerunica.* Chevalier, in addition, believes that *E. garuana* is probably not distinct from the Paxian plant, and ends his summary by mentioning for the Cameroon and for the French Sudan, respectively, two 3-winged *Euphorbia* plants (op. cit. 568) in the group of *E. kamerunica.* These unnamed plants, Chevalier believes " are, perhaps, *E. trigona* Haw. (non Roxb.) which Mr. Cruzet connects with *E. Hermentiana.*" The writer of these notes happens to be the Mr. Cruzet (naturally, *in litt.*) spoken of by Chevalier !

The host of published binomials revolving around *E. kamerunica,* it will be noticed, is truly great, and the nexus of the synonymy less clearly established than may be desired. The writer felt, however, that the very fragmentary cymes at first sent by Mr. Deighton excluded Pax's species. Deighton's *Euphorbia* had comparatively long, thin peduncles, and failed to agree with the plants described by Chevalier in bracts * and in sexual characters. Such differences, the first two particularly, implicitly established different species. The cyme of a succulent *Euphorbia* is a reduced pseudo-umbel in the nature of the evolved " umbel " of the species of the genus, sect. *Tithymalus* auct. The degree of its reduction (here read, length and thickness) bears upon the place that the species takes in the

* In this paper, *bracts* must be understood as *bracts to the cyme and to the cyathium.*

evolution of the genus, or genera. The bracts are likewise reduced floral leaves, and have the same diagnostic value that generally must be attributed to the cyme.

The attention of the writer having been thus focussed upon the nature and length of the cyme and upon the nature of the bracts, inquiries were pursued on the material preserved in Paris and in Berlin. Grateful acknowledgment must be made of the kind interest of Prof. A. Guillaumin and of Dr. R. Mansfeld. The former wrote: "We have in the herbarium [*of the Museum of Natural History, Paris*] *Barter* 1012,* which does not appear under *E. kamerunica* in Dyer, Fl. Trop. Afr. **6,** pt. 1, but has been used by Hutchinson & Dalziel in Fl. W. Trop. Afr. **1,** pt. 2. The sample in question is floriferous: the cymes are fairly crowded and somewhat agree with those of your plant (Deighton's *Euphorbia*), but the bracts are markedly different, thinner, evidently carinate, less concave, saccate at the base. The spines are two to three times shorter than those of your plant. In the Chevalier herbarium are preserved numerous specimens from French West Africa, none of which is in flower. N. E. Brown attributed them in a MS. note to a species near *E. kamerunica*, not to the species itself. I should judge that these specimens come nearer to your plant than the specimen of Barter. The length of the cyme is probably not worth mention, but I am impressed by the evident difference exhibited by the bracts." This analysis was returned from an all too scanty material as expressing the opinion of my kind correspondent. Dr. Mansfeld wrote, from Berlin: "The cyathia of *E. kamerunica* [*Preuss* 511] are mostly ternate and short-pedunculate. So far as it can be seen from the scanty material at hand the cymes are paired, and clusters of 5–6 cyathia result from the crowding together of the cymes so paired. It is not to be excluded that one cyme in the type carries more than 3 cyathia, but the data could be verified only at the price of breaking up the type altogether." Dr. Mansfeld's report defined the cyme of *E. kamerunica* as being of a kind usually found in the species of the group. N. E. Brown's description, quoted above, might be understood to mean precisely the contrary.

Barring lesser considerations, these communications, live specimens, and the evidence in the literature, appeared to establish that:—

(a) Pax's binomial was misapplied to Deighton's *Euphorbia*. The length of the cyme and the nature of the bracts (this latter at least in Chevalier's interpretation) excluded the identity.

(b) Deighton's *Euphorbia* might be *E. Barteri* from description. The geographic range from Sierra Leone to northern Nigeria in itself was not prohibitive. The diffusion of *Euphorbiaceae* and of *Euphorbia* (not to mention other families) from west to east in Africa, and generally in the world, is obvious to the careful investigator. The succulent species of the Indian lands are a fair

* This is the type number of *E. Barteri* N. E. Br.

match to those of West Africa. The tracks of migration, of course, admit secondary paths but these do not obscure the trend of the movement.

(c) The synonymy *E. kamerunica* = *E. Barteri* required definite confirmation. The descriptions in themselves made it improbable.

(d) Chevalier's *E. kamerunica* might include different species.

(e) Deighton's *Euphorbia* was not *E. trigona* Haw. (non Roxb.) (*E. Hermentiana* Lem.) from which it wholly disagreed in spine-shield and habit.

(f) Deighton's *Euphorbia* was not *E. garuana* N. E. Br. The writer has seen a cultivated succulent *Euphorbia* fully agreeing in vegetative cycle and in "habit" with the species of the West African Coast north of the equator. This specimen had the odd, weak, orbicular spine-shields described in the publication of *E. garuana* and was quite unlike Deighton's *Euphorbia*.

Better samples having been received meanwhile (cymes in fluid, *Deighton* 3109A, B), thanks to Sir A. Hill's kind interest, it became possible to compare the material from Sierra Leone with the specimens and types of *E. kamerunica* and *E. Barteri* in the herbarium of the Royal Botanic Gardens, Kew. The analysis made by Miss E. A. Bruce and Mr. E. Milne-Redhead, whose assistance the writer gratefully acknowledges, established that Mr. Deighton's *Euphorbia* was unrecorded. The writer may transcribe the record as follows :—

	E. kamerunica.	*E. Barteri.*	*Deighton* 3109B (*E. Deightonii*, cotype)
Spines	2–2·5 cm. apart.	1–1·5 cm.	1·5–1·8 cm.
Peduncle ...	2 mm. long	5–7 mm.	5–10 mm.
Lateral branches	3 mm. long	5–7 mm.	5–9 mm.
Primary bracts	3·5 mm. long × 5 mm. wide	4 × 5 mm.	2 × 2·5 mm.
Cyathium bracts	4 mm. long × 4·5 mm. wide ±triangular.	3·5 × 4 mm. ±rectangular.	3·5 × 3 mm. ±rectangular.

These two botanists wrote : "In these three species the nature of the inflorescence is fundamentally the same. In all three species it is probable that 3 three-cyathied cymes may be produced at each floral eye, giving a maximum of 9 cyathia. Frequently some cyathia are suppressed, and fewer cymes are produced. The varying lengths of the peduncle and cyme-branches give the species a distinct appearance when in flower. According to a drawing of the type specimen of *E. garuana* N. E. Br. the spine-shields are smaller than those of *E. Deightonii*."

Mr. Deighton furnished the writer with data of habit and branching as they appeared from the type-trees (growing in Mr. Deighton's garden at Njala, $5\frac{1}{2}$ years old, 10 ft. high and 4 ft. across), and interesting notes on habitat, which are here transcribed *verbatim*. "The plants originated from cuttings.

I have seen older plants about 15 ft. high and 30 ft. across. Branches 3–6 angled, mostly 4-angled. Branching candelabriform with new shoots appearing from below the ground also. Normally the branches appear in whorls about 10 in. apart up the stem, which seem to correspond to one season's growth, though lengths of stem up to about 3 ft. occur without whorls of branches. At the end of the season's growth the measurements of the last whorl are: main stem between point of origin of next to last, and of last branch-whorl 10 in., branches up to 8 in. long. Some branches from the lower whorls may grow quicker and slightly exceed the main stem in length, but the whole bush is a flat hemispherical shape when very old (specimens have been recorded up to 30 ft. across, and my own plants are more or less flat on top).

"This plant, as far as I know, is always cultivated in Sierra Leone, and therefore I feel that "type localities" are hardly applicable. My Njala plants (Southern Province) originally came from Makene (Northern Province), but there are plants at Njala that have come from Kenema (Southern Province). I have seen this species also in gardens in Freetown. It usually is grown as a hedge-plant." (Deighton *in litt.*, July 12th, 1935.)

The notes that follow are taken from one of the rooted cuttings sent by Mr. Deighton, and now 2 ft. tall:—

Stems dark green, occasionally mottled with pale green, variously obstricted, broadly grooved to flat winged, on weak shoots 3-angled, otherwise 4-angled, up to 4·5 cm. across. Wings toothed, up to 1·5 cm. broad, 2–3 mm. thick at the margin; teeth scarcely 2·5 cm. apart, the sinus between them 3–5 mm. deep, ultimately more or less evanescent; spines 2, reddish brown, becoming gray, sharp, of hard consistence, each 12 mm. long or less, horizontal or, occasionally, weakly ascending, diverging at 110°–145°, their tips up to 2 cm. apart; spine-shields subobovate, at first free, up to 9 mm. long, 6 mm. broad, ultimately subdecurrent to decurrent along the margin of the wings. Floral-eye lower than the centre of the sinus, covered by 1–2 fugacious minute elliptic scales, at first free, later connected with the spine-shield. Leaf caducous, subobovate, fleshy, keeled on the back, up to 3 mm. long, 2·5 mm. broad; leaf-scar round-triangular, inclosed by the spine-shield; auricles * in pairs laterally to the leaf-scar, scarious to fleshy, subpersistent.

In addition to the data already given the inflorescences in fluid show the following:—

Cymes 1–3 per floral-eye, at the end of anthesis up to 2 cm. tall; cyathium ultimately to 9 mm. broad, 3–4 mm. deep, broad-campanulate; bracts thin, scarious, deciduous, mostly with evident longitudinal fibro-vascular threads under the lens, keeled, more or

* These "auricles" together with the leaf, or so-called "scale" in the very succulent forms, are aborted members of a ternate foliar verticil, and fully equivalent to the "glandular stipules" of *Euphorbia* sect. *Goniostema*, *Poinsettia*, etc. They would be called stipules but for the confused terminology now current and the attending risk of misunderstanding.

less rectangular and denticulate, usually produced into an extended tip. Nectaria (glands) 5, scarcely contiguous, elliptic, minutely granular, 4 mm. broad, 2 mm. wide. Lobes subquadrangular, laciniate, the central laciniae longest, 2 mm. broad, 1–1·5 mm. high. Stamens in the ♂ stage slightly exserted and up to 4 mm. long, articulate above the middle of the filament. Staminodia numerous, mostly linear, deeply laciniate-cleft to plumose, hyaline, up to 4 mm. long. Ovary subinclosed, broad-ovate, 2 mm. broad, 2 mm. long, the cocci scarcely evident, insident upon a fleshy obconic stipe, 1–1·5 mm. high, sublobulate at the tip. Branches of style 3, 1–1·5 mm. long, free nearly to base ; stigma deeply bifid, spreading.

Capsule (fragmentary, and perhaps under size) about 1 cm. broad, the cocci manifestly distinct, narrowed or much narrowed at the keels, glabrous ; stipe . . . . Seed ecarunculate, globular, 3 mm. broad, light brown, smooth, not marbled or spotted ; aril thin ; raphe dark brown.

Type : *Deighton* 3109A, B, Njala, Mano district, Sierra Leone, 3 samples of cymes and strips of wing in fluid, 18.1.1936 ; 25.1.1936. In the herbarium of the author.

Syntype : *Deighton* 3109 B, from the type, in the Kew Herbarium.

The data originally sent by Mr. Deighton, and reported above, should be taken into consideration for the habitat of the new species, the type-locality of which, technically, must remain Njala.

The author has identified as *E. Deightonii* two sheets kindly sent for verification from the Kew Herbarium. The material is sterile, but there is scarcely a doubt that it belongs to the species just presented. These sheets are : *Deighton* 2609, Njala, Mano district, Sierra Leone, Febr. 1933 ; and *S. Rowe*, s.n., Sierra Leone, without nearer indication, January 1886.

The latter specimen has been accepted as *E. leonensis* N. E. Br., in an unsigned MS. note by Dr. J. Hutchinson. Mr. Deighton sent last year to the writer a specimen, which unfortunately arrived dead, of what was described as " an *Elaeophorbia* with 3–4 angles." Although nothing much could be learned from such material the writer inclines to the opinion that it was *E. leonensis*. This much misunderstood species, *sensu quodam*, is intermediate between *E. Teke* (*E. helicothele* Hort. Bot. Kisantu) and *E. paganorum* (v.v.) which are quite different from *E. Deightonii* and the whole natural group to which it belongs. There can be no question but that the succulent species of *Euphorbia* of Africa not only will still yield much new in point of taxonomy, but will furnish data of the first importance for a history of the evolution and of the migration of the genus and of the family. We have barely scratched the surface of a most promising field.

Euphorbia Deightonii *Croizat*, sp. nov.—*Arbor* vel *frutex* dumosus, multiceps, ad 15 pedes altus, ad 30 pedes latus, fide amicissimi

Deightonii. *Ramuli* 3–6-angulati, hinc inde obstricti, e specimine vivo ad 4·5 cm. lati, canaliculati vel patente alati ; alis dentatis ad 1·5 cm. latis, margine 2–3 mm. crassis ; dentibus (podariis) 2·5 cm. discretis ; sinubus inter dentes 3–5 cm. profundis obsolescentibus ; aculeis binis horizontalibus apice ad 2 cm. discretis ; puncto florigero infra medium sinum sito ; folio caduco subobovato carnoso 3 mm. longo 2·5 mm. lato ; auriculis binis subpersistentibus. *Cymae* 1–3 aggregatae, anthesi peracta ad 2 cm. altae ; bracteis tenuibus deciduis scariosis plus minusve rectangularibus denticulatis apice in acumen productis ; cyathio denique ad 9 mm. lato 3–4 mm. profundo late campanulato ; nectariis (glandulis) 5 subdiscretis 4 mm. latis 2 mm. longis ; lobis subquadrangularibus laciniatis laciniis medianis longioribus 2 mm. latis 1–1·5 mm. longis ; staminibus ad 4 mm. longis supra medium filamentum articulatis ; staminodiis plurimis hyalinis linearibus profunde laciniato-fissis plumosisve ; germine subincluso ovoideo 2 mm. lato longoque, coccis obscuris, stipiti insidente carnoso obconico 1–1·5 mm. longo ad apicem sublobulato ; stylis 3 fere ad basin discretis 1–1·5 mm. longis ; stigmatibus profunde bifidis patentibus. *Capsula* (ejus fragmentum : an vero matura ?) ad 1 cm. lata ; coccis glabris discretis ad costas angustatis ; stipite . . . ; semine globoso ecarunculato 3 mm. lato pallide brunneo laevi haud marmorato vel maculato ; arillo tenuiore ; raphide badio.

Sierra Leone : Njala, Mano district, 18 et 25.i.1936, *Deighton* 3109 A, B [Typus, in herbario auctoris ; syntypus (*Deighton* 3109 B) in Herb. Kew]. Locus classicus est Njala, sed vide notas Deightonii ejusdem in textu anglico.

X—CONTRIBUTIONS TO THE FLORA OF TROPICAL AMERICA : XXXIV.* Plantae Hintonianae : VI.*

Acanthaceae.† E. C. Leonard.

Recent plant collections from the District of Temascaltepec and adjacent regions of Mexico by Mr. G. B. Hinton are proving remarkable for the many new and rare species they contain. Through the courtesy of the Director of the Royal Botanic Gardens, Kew, I have been able to study most of the *Acanthaceae*, 14 of which appear to be new. These are described herewith. The three species of *Ruellia* are based upon older collections, but the others are known only from Mr. Hinton's material.

Ruellia Galeottii *Leonard*, sp. nov. ; suffrutescens ; caules pilosi vel glabrati ; folia ovata vel oblongo-ovata vel elliptica, apice acuminata, basi angustata, undulata vel leviter dentata, utrinque pilosa ; cymae axillares, subsessiles ; bracteolae oblongo-ellipticae, plus minusve glanduloso-pilosae ; calyces glanduloso-pilosi, laciniis

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* Continued from K.B. 1937, 505.

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lineari-spathulatis apice rotundatis; corolla purpurea, parce pubescens, hypocrateriformis, lobis rotundis emarginatis; capsula glabra.

Suffrutescent; *stem* simple or branched, pilose or glabrate below; *petioles* slender, up to 6 cm. long, sparingly pilose; *leaf blades* ovate to oblong-ovate or elliptic, 4 to 16 cm. long, 2·5 to 8 cm. wide, short-acuminate at apex, cuneate at base and decurrent, undulate or shallowly dentate, both surfaces hispid-pilose, the costa and lateral nerves (7 or 8 pairs) prominent; *flowers* borne in short axillary cymes; *bractlets* oblong-elliptic, about 8 mm. long and 2 to 3 mm. wide, glandular-pilose; *pedicels* up to 0·5 mm. long; *calyx* 7 to 10 mm. long, glandular-pilose, the lobes linear-spatulate, rounded at apex; *corolla* purplish, sparingly pubescent, 2 cm. long, the tube ventricose, the narrow portion 8 mm. long and 1 mm. in diameter, the mouth about 7 mm. in diameter, the limb 10 to 13 mm. broad, the lobes rounded, 5 mm. wide, shallowly emarginate; *stamens* didynamous, the shorter filament of each pair 3 mm. long, the longer 4 mm., glabrous; *anthers* oblong, 1·5 mm. long and 0·5 mm. wide; *style* about 12 mm. long, minutely pilosulous; *capsule* 8 mm. long and 3 mm. wide, pointed at apex, narrowed to a slender solid base about 3 mm. long, glabrous, 2- to 4-seeded; *retinacula* curved, unguiculate, about 2 mm. long, acute at apex; *seeds* flat, oval, 3 mm. long and 2 to 2·5 mm. wide, appearing glabrous when dry, mucilaginous-pilose when immersed.

Type in the U.S. National Herbarium, no. 572,853, collected at Sola, Oaxaca, Mexico, Oct. 1844, by H. Galeotti (no. 510 J).

Additional specimens examined.—SINALOA: Culiacan, *Brandegee*, Oct. 19, 1904; Mazatlán, *Ortega* 5705; El Roble, *Ortega* 6540; without definite locality, *Ortega* 4756. MEXICO: Tejupilco, Distr. Temascaltepec, *Hinton* 2659. COLIMA: Colima, *Palmer* 1321. GUERRERO: Acapulco, *Palmer* 194. OAXACA: Tomellin Canyon, *Pringle* 6259; Picacho to San Gerónimo, *Purpus* 6843.

Closely related to *R. inundata* H.B.K., but easily distinguishable by its linear-spatulate and relatively much broader calyx segments (strictly linear in *R. inundata*), its smaller corolla, not over 2 cm. long (2 to 2·5 cm. long in *R. inundata*), with the enlarged portion of the tube short-funnelform instead of subcylindric, and its flowers which are borne in much shorter and more compact clusters.

Ruellia oaxacana *Leonard*, sp. nov.; suffrutescens; caulis pubescens vel internodiis glaber; folia oblongo-ovata vel oblongo-elliptica, apice acuminata, basi angustata, glabra vel costa puberula; inflorescentia fascicularis, axillaris, sessilis vel subsessilis; bracteae oblanceolatae; bracteolae triangulares parce pubescentes; calycis laciniae lanceolatae puberulae; corolla lilacina, parce pubescens, hypocrateriformis, lobis suborbiculatis; capsula puberula.

Suffrutescent; *stem* erect or ascending, simple or branched, up to 50 cm. high, subquadrangular, the tips and nodes pubescent

with curved hairs, the internodes (especially the lower) glabrate ; *petioles* 1 to 3 cm. long, channelled, sparingly puberulous with curved hairs ; *leaf blades* oblong-ovate or oblong-elliptic, 6 to 15 cm. long, 2 to 4·5 cm. wide, acuminate (the tip blunt), narrowed at base and decurrent, firm, entire or undulate, glabrous or the costa and lateral veins (5 or 6 pairs) puberulous with curved hairs, both surfaces bearing numerous cystoliths ; *flowers* numerous, borne in sessile or subsessile axillary fascicles ; *bracts* oblanceolate, about 1 cm. long, 8 mm. wide ; *bractlets* triangular, 2 mm. long, 1 mm. wide at base, sparingly pubescent ; *calyx* 5 to 6 mm. long, puberulous, the tube 1 mm. long, the segments lanceolate, 0·75 mm. wide at base ; *corolla* 3 to 3·5 cm. long, light purple, sparingly pubescent, the tube ventricose, the narrow basal portion 1 to 1·5 cm. long and 1·5 mm. in diameter, the upper portion obconic, 6 to 7 mm. wide at mouth, the limb 0·5 to 2 cm. broad, the lobes suborbicular, about 6 mm. broad ; *stamens* didynamous, the shorter of each pair 6 mm. long, the longer 10 mm., glabrous or bearing a few minute hairs near the base ; *anthers* about 2 mm. long, and 0·5 mm. broad, the tip and basal lobes minutely apiculate ; *ovary* puberulous ; *style* 2·5 to 3 cm. long, sparingly pubescent, the hairs ascending, the stigma lobes very unequal, one linear-lanceolate, 2 mm. long, and 0·25 mm. wide, the other vestigial ; *capsule* about 1 cm. long and 2 mm. broad, pointed at apex, narrowed to a solid basal portion about 3 mm. long and wide, puberulous, 10- to 12-seeded ; *retinacula* 1 mm. long, flat and often forked at apex ; *seed* (immature) flat, orbicular, about 1·5 mm. in diameter, the flat surface glabrous, the margins puberulous, mucilaginous when moistened.

Type in the U.S. National Herbarium, no. 907,989, collected on the road between Pochutla and Pluma, Oaxaca, Mexico, March 16, 1895, by E. W. Nelson (no. 2463).

Additional specimens examined.—NAYARIT : Arroyo del Salitre, *Ortega* 26. MEXICO : Ixtapan, Distr. Temascaltepec, *Hinton* 3922. OAXACA : Distr. Pochutla, *Conzatti, Reko, and Makrinius* 3150 ; Cafetal Concordia, *Morton and Makrinius* 2377 ; Cerro Concordia, *Morton and Makrinius* 2650.

Apparently not closely related to any other Mexican member of the genus.

Ruellia spissa *Leonard*, sp. nov. ; herba, radicibus crassis ; caules bifariam pubescentes ; folia subsessilia, ovata vel oblongo-ovata, apice acuta vel obtusa, basi angustata vel rotundata, utrinque pilosa ; flores subsessiles, terminales vel subterminales ; bracteae oblongae, pilosae, ciliatae ; calycis laciniae subulatae, pilosae, ciliatae ; corolla purpurea, puberula, hypocrateriformis ; capsula glabra, callis parce pubescentibus.

Herb ; *roots* thick-fibrous ; stem erect or ascending, long-pilose, also pubescent in 2 lines of minute curved hairs ; *cystoliths* parallel,

sometimes inconspicuous; *leaves* subsessile, the blades ovate to oblong-ovate, 2 to 7 cm. long, 1·5 to 3 cm. wide, acutish at apex, rounded or narrowed at base, entire or denticulate, ciliate, both surfaces pilose, the hairs of the lower surface restricted chiefly to the costa and lateral veins (5 or 6 pairs); *flowers* subsessile, terminal or subterminal; *bracts* narrowly oblong, 6 to 13 mm. long, 1 to 3 mm. wide, pilose, ciliate; *calyx* 2 cm. long, the tube 2 or 3 mm. long, glabrous, the segments subulate, 1 mm. wide at base, pilose, or glabrous below, ciliate, the hairs spreading; *corolla* 4 to 5 cm. long, purple, puberulous with curved hairs, the tube infundibular, the narrowed basal portion 10 to 13 mm. long and 2 mm. in diameter, the enlarged portion obconic or narrowly campanulate, 1·5 to 2 cm. broad at throat, the lobes suborbicular, 15 mm. wide, crenulate; *stamens* didynamous, glabrous, the shorter filament of each pair 7 mm. long, the longer 9 mm.; *anthers* oblong-ovate, 3·5 mm. long, 1 mm. broad; *ovary* glabrous; style 2·7 cm. long, glabrous, pilosulous at base, the stigma lobes unequal, one 2·5 mm. long, the other 1 mm. long, both about 0·75 mm. wide; *capsules* 15 to 19 mm. long, 4 to 5 mm. broad, pointed at tip, gradually narrowed from middle, 2·5 mm. wide at base, glabrous, or the calluses sparingly pilosulous.

Type in the U.S. National Herbarium, no. 944,057, collected at Guadalajara, Jalisco, Mexico, July 21, 1886, by Edward Palmer (no. 218).

Additional specimens examined.—SINALOA: Between Rosario and Colomas, *Rose* 1634. JALISCO: Guadalajara, *Pringle* 2500, 11079; Tequila, *Rose and Hough* 4766. MEXICO: Ixtapan, Distr. Temascaltepec, *Hinton* 1068; Timbres, Distr. Temascaltepec, *Hinton* 1231; Santa Fé, Valley of Mexico, *Rose and Painter* 8623; Tlalnepantla, *Rose, Painter and Rose* 8408.

Ruellia spissa is distinguished easily from its close relative *R. lactea* Cav. by its eglandular ciliate calyx segments. In *R. lactea* the segments are strongly glandular-pubescent and, at most, only sparingly ciliate.

Stenandrium mexicanum *Leonard*, sp. nov.; herba acaulis; folia ovalia vel elliptica vel late ovata, apice rotundata, basi angusta vel obtusa, utrinque pilosa, petiolis gracilibus; spicae pedunculatae; bracteae oblongae vel oblongo-ellipticae, apice rotundatae vel obtusae vel acutae, obscure 3-nerviae, utrinque pilosulae; bracteolae lineares vel lineari-lanceolatae, ciliatae, 3–nerviae; calycis laciniae subaequales, anguste lanceolatae, ciliatae, 3–5-nerviae; corolla purpurea, glabra vel apice pubescens, lobis obovatis rotundatis; capsula oblongo-ovata, apice puberula.

Small acaulescent *herb*; *rootstock* 1 to 2 cm. long; *petioles* slender, 1 to 6 cm. long, pubescent, the hairs spreading or retrorsely curved, 0·25 to 0·5 mm. long; *leaf blades* oval to elliptic or broadly ovate, 2 to 6 cm. long, 1·5 to 3 cm. wide, rounded at apex, obtuse or

narrowed at base, entire, both surfaces sparingly to rather densely pilose, the hairs up to 0·5 mm. long, those of the lower surfaces confined chiefly to the costa and lateral veins (5 or 6 pairs) ; *peduncle* 1 to 6 cm. long, puberulous, the hairs retrorsely curved ; *spikes* 1 to 5 cm. long ; *bracts* imbricate (at length more or less spreading and lax), oval to oblong or oblong-elliptic, 7 to 12 mm. long, 3 to 6 mm. wide, rounded or obtuse at apex or the uppermost acute or mucronate, faintly 3–nerved, both surfaces pilosulous (sometimes sparingly so), the hairs up to 0·5 mm. long ; *bractlets* linear or linear-lanceolate, 3·5 to 6 mm. long, 0·5 to 0·75 mm. wide, the dorsal surface bearing a few small hairs toward tip, ciliate, 3–nerved ; *calyx segments* subequal, narrowly lanceolate, 4 to 7 mm. long, 0·75 to 1·25 mm. wide, ciliate, 3- to obscurely 5-nerved ; *corolla* 1 to 1·5 cm. long, light purple, glabrous or the lobes sparingly pubescent externally toward tip, the tube about 6 mm. long and 2 mm. in diameter near base, narrowed to 1 mm. at throat, the limb up to 2 cm. broad, the lobes obovate, rounded at tip, the 2 posterior lobes about 8 mm. long and 5 mm. wide, the 3 anterior lobes about 11 mm. long, the middle one 8 mm. wide, the lateral 6 mm. wide ; all delicately nerved ; *style* about 4 mm. long, sparingly pubescent toward base ; *ovary* 2 mm. long ; *capsule* (immature) puberulous toward tip, 7 mm. long, oblong-ovoid.

Type in the Kew Herbarium, collected at San Lucas, District of Temascaltepec, Mexico, July 7, 1933, by G. B. Hinton (no. 4292).

Additional specimens examined. — Mexico : Chorrera, Distr. Temascaltepec, *Hinton* 754 ; Peñon, Distr. Temascaltepec, *Hinton* 6086.

Well marked by its relatively broad leaf blades, obtuse or rounded bracts, and large purple flowers. This and several other Mexican species seem rather closely related to *Stenandrium dulce* Nees, described from Chile.

Aphelandra lineariloba *Leonard*, sp. nov. ; frutex ; caules minute pubescentes vel glabrati ; folia oblongo-ovata, apice acuminata, basi in petiolum angustata, integra, utrinque hirtella vel glabrata, petiolis gracilibus ; spicae terminales vel subterminales, ubique minute glanduloso-pubescentes ; bracteae ovatae, apice obtusae vel acutae, mucronatae, imbricatae ; bracteolae et calycis laciniae lanceolatae ; corolla glanduloso-puberula, labio superiore bilobo, inferiore trilobo, lobis linearibus ; capsula ovoidea, apice obtusa, puberula, 4–sperma ; semina hirtella, pilis albis patentibus praedita.

Shrub up to 3 metres high ; *stems* terete, glabrous, or the tips strigillose ; *petioles* slender, up to 2·5 cm. long, glabrous or strigillose ; *leaf blades* oblong-ovate, up to 12 cm. long and 5 cm. wide, acuminate at apex, narrowed at base and decurrent, entire, firm, both surfaces sparingly hirtellous or glabrate, the hairs of the lower surface confined chiefly to the costa and lateral nerves (8 to 10 pairs) ;

flowers borne in terminal or subterminal spikes up to 30 cm. long and 2 cm. in diameter, the rachis finely glandular-pubescent; *bracts* obovate, 15 to 17 mm. long, 8 to 10 mm. wide, obtuse to acute at apex, ending in a mucro 0·5 mm. long, often purplish, ascending, imbricate, obscurely 3-nerved, both surfaces finely glandular-pubescent; *bractlets* lanceolate, 12 to 13 mm. long, 3 mm. wide near base, gradually narrowed to a slender tip, veiny, both surfaces finely glandular, the costa prominent; *calyx segments* subequal, lanceolate, 14 to 15 mm. long, 3 to 4·5 mm. wide near base, finely glandular-pubescent without, glabrous within; *corolla* 3 cm. long, purple (?), glandular-puberulous, the tube gradually enlarged from 2·5 mm. at base to 5 mm. at mouth, the lips 1 cm. long, the posterior ovate, 7 mm. wide at base, emarginate at apex, the anterior 3-lobed, the middle lobe linear-lanceolate, 1·75 mm. wide, the lateral lobes linear, 1·25 mm. wide; *stamens* reaching throat of corolla, the shorter filament of each pair glabrous or bearing a few hairs near the base, the longer bearing a line of spreading hairs up to 0·5 mm. long; *capsule* ovoid, about 17 mm. long, 7 mm. wide, obtuse at apex, densely brownish-puberulous, 4-seeded; *retinacula* 2 mm. long, cucullate at apex; *seed* flat, suborbicular, 3·5 mm. in diameter, densely hirtellous with white spreading hairs.

Type in the Kew Herbarium, collected at Villaneda, District of Temascaltepec, Mexico, February 22, 1935, by G. B. Hinton (no. 7412). Hinton's no. 3156 collected at Acatitlan, Temascaltepec, is also of this species.

In general appearance *A. lineariloba* resembles *A. madrensis* Lindau, described from the Sierra Madre of Mexico, but the bracts are mucronate, instead of merely acute as in *A. madrensis*, and the lobes of the lower lip of the corolla are narrowly linear instead of oval.

The name of this new species was suggested by the extremely narrow lobes of the anterior lip of the corolla. Inasmuch as only the uppermost leaves are present in the specimens examined, the dimensions above stated will probably prove too small if applied to more complete specimens or to growing plants.

Aphelandra verticillata *Nees ex Hemsl.* Biol. Centr. Amer. Bot. **2,** 513 (1882); Nees in DC. Prodr. **11,** 281 (1847), as synonym. *Crossandra Haenkeana* Nees, *l.c.*, not *Aphelandra Haenkeana* Nees, *l.c.* 298.

Mexico: Ypericones, District of Temascaltepec, *Hinton* 2971.

This species is not represented otherwise in the U.S. National Herbarium. It is well marked by its quaternate leaves.

Berginia Hintonii *Leonard*, sp. nov.; frutex; caules teretes, glabrati; folia ignota; spicae breves, rhachi tomentosa, pilis albis; pedunculi breves, bracteis adpressis ovatis acuminatis imbricatis instructi; bracteae late ovatae mucronatae glabrae, marginibus tomentosis; bracteolae ovato-lanceolatae pubescentes; calycis laciniae aequales obtusae, subtiliter pubescentes, lacinia superiore

ovata, ceteris oblongo-lanceolatis; corolla pubescens, labio superiore bilobo, lobis oblongo-ovatis, inferiore trilobo, lobis orbicularibus; capsula ovoidea, apice obtusa, subtiliter pubescens; semina tomentosa.

Shrub; *stem* terete, glabrous, branched, bearing scattered whitish round or oval lenticels up to 1 mm. long, the ultimate branches very slender; *leaves* deciduous; *flowers* borne in short peduncled spikes up to 8 mm. long, the peduncles 3 to 4 mm. long covered by 5 to 7 closely imbricate pairs of bracts, these ovate, 0·75 to 1·5 mm. long, mucronate, pubescent, ciliate, subcoriaceous; *rachis* densely white-tomentose; *bracts* subtending the flowers broadly ovate, about 1·5 mm. in diameter, mucronate, tomentose; *bractlets* ovate-lanceolate, tomentose; *calyx* 4 mm. long, the segments equal, obtuse, finely pubescent, the hairs white, some of them glandular, the posterior segment ovate, the others oblong-lanceolate, all 1–1·5 mm. wide, striate; *corolla* about 8 mm. long, pubescent, purple (?), veiny, the tube 1·5 mm. in diameter near base, narrowed to 1 mm. about 2 mm. above base, thence gradually enlarged to 3 mm. at throat, the upper lip 3·5 mm. long, 2-lobed, the lobes oblong-ovate, the lower lip 3-lobed, the lobes orbicular, the middle about 3·5 mm. wide, the lateral 3 mm. wide; *filaments* 1·5 mm. long, long-pilose; style 4 mm. long, sparingly hirtellous toward base, the stigma 2-lobed; *capsule* ovoid, about 1 cm. long, 4 mm. wide, obtuse at apex, finely and minutely pubescent; *retinacula* 2 mm. long; *seed* (immature) tomentose.

Type in the Kew Herbarium, collected at Coyuca, Guerrero, Mexico, April 26, 1934, by G. B. Hinton (no. 5956).

Very distinct from all other Mexican species in its short bract-covered peduncles and short tomentose spikes. The branches of the specimen at hand are entirely devoid of leaves, but in a pocket attached to the sheet is a fragment of a leaf blade, this probably ovate when intact, about 3 cm. long and 2 cm. wide, sparingly hirtellus (the costa and veins densely so), with a slender petiole 1 cm. long.

Chalarothyrsus amplexicaulis *Lindau* in Bull. Herb. Boiss. sér. 2, **4**, 327 (1904).

MEXICO: Nanchititla, District of Temascaltepec, *Hinton* 7384, 7624. Known also from Michoacan and Guerrero.

This specimen agrees very well with the type collection (*Langlassé* 698), except that the stems of the Hinton plants are more densely pilose. As Langlassé's specimen bore no fruit, the following description of the capsules from Hinton's no. 7624 may be added.

Capsule clavate, about 12 mm. long, abruptly narrowed from about the middle to a slender curved stipe, glabrous, 1-seeded (?), the two valves very dissimilar, the posterior clavate, 1·5 mm. wide, the anterior lute-shaped, 3 mm. wide, both rounded at tip; *seed* flat, bearing a small spinelike projection on the edge, papillose.

Carlowrightia lanceolata *Leonard*, sp. nov.; suffrutescens; caules teretes, glabri vel apice bifariam hirtelli; folia anguste lanceolata, saepe falcata, utrinque acuta, hirtella vel subglabra, scaberula, petiolis brevibus; inflorescentia paniculata, spicis multis gracilibus; flores sessiles distantes; bracteae et bracteolae minutae, subulatae, puberulae vel glabrae; calycis laciniae subulatae, puberulae, pilis glanduliferis; corolla purpurea, parce pubescens, tubo brevi, lobis oblongo-obovatis; capsula stipitata, hirtella; semina plana, muricata.

Suffrutescent, up to 40 cm. high or more; *stems* terete, hirtellous in two lines, the hairs retrorsely curved, up to 0·5 mm. long; *petioles* up to 5 mm. long; *leaf blades* narrowly lanceolate, often falcate, up to 10 cm. long and 1·5 cm. wide, gradually narrowed to a slender apex, acute at base, entire, rather thin, sparingly hirtellous or subglabrous, scaberulous; *flowers* borne in numerous interrupted panicled spikes up to 9 cm. long, the branches of the inflorescence glandular-puberulous; *bracts* subtending the spikes and flowers subulate, about 5 mm. long and 0·5 mm. wide at base, puberulous or glabrate, those subtending the branches of the inflorescence larger and intergrading into the stem leaves, bractlets subulate, up to 2·5 mm. long; *calyx* about 4 mm. long, the segments subulate, 0·5 mm. wide at base, glandular-puberulous; *corolla* 7 to 8 mm. long, purple, minutely and sparingly pubescent, the tube narrow, 2·5 mm. long, 1 mm. in diameter at base, narrowed 1 mm. above base to 0·75 mm., thence gradually enlarged to 1·5 mm. at throat, the lobes oblong-obovate, up to 5 mm. long and 2·5 mm. wide; filaments slender, 5·5 mm. long, glabrous, the anthers 1 mm. long, their lobes parallel, subequally attached; *style* about 9 mm. long, glabrous; capsule about 7 mm. long, 4 mm. broad, abruptly narrowed to a slender stipe (3 mm. long), pointed at tip, rather densely hirtellous; *seeds* suborbicular, flat, the margins thickened, obliquely cordate, white or purplish, muricate, the projections of the inner side longer than those of the outer.

Type in the Kew Herbarium, collected in water at Tejupilco, District of Temascaltepec, Mexico, altitude 1340 metres, November 21, 1932, by G. B. Hinton (no. 2672). Hinton's no. 2990, collected at Plaza de Gallos, Temascaltepec, altitude 1200 metres, December 21, 1932, is also of this species.

Closely related to *C. pectinata* Brandegee, but recognizable by its strongly glandular-puberulous inflorescence. In *C. pectinata* the branches of the panicle, at least in the type material (*Brandegee* no. 452, from Lower California), are glabrous or at most sparingly pilosulous in two lines. In its non-striate stems and rather densely hirtellous capsules *C. lanceolata* differs notably from *C. Lindauiana* Standl., in which the capsules are as much as 9 mm. long and mostly glabrous.

Carlowrightia mucronata *Leonard*, sp. nov.; suffrutescens; caules teretes minute puberuli vel glabrati; folia ovalia vel ovata vel

oblongo-ovata, apice acuta vel rotundata, mucronulata, basi rotundata, puberula; inflorescentia paniculata, spicis multis gracilibus; flores sessiles distantes; bracteae et bracteolae minutae, subulatae, minute pubescentes; calycis laciniae anguste lanceolatae, minute pubescentes, pilis eglandulosis quam glandulosis duplo longioribus; corolla parce pubescens vel glabrata, labio superiore ovato, apice emarginato, basi unguiculato, inferiore trilobo, lobis oblongis; capsula stipitata, glabra; semina plana, muricata.

Suffrutescent; *stems* slender, branched, terete, minutely puberulous (the hairs retrorsely curved) or glabrate; *petioles* up to 10 mm. long, minutely puberulous with curved hairs; *leaf blades* oval, or ovate to oblong-ovate, the largest 6·5 cm. long and 4 cm. wide, acute to rounded at apex (at least the uppermost tipped by a short mucro), rounded at base, thin, entire, both surfaces puberulous, the costa and lateral veins (5 or 6 pairs) slender, whitish or purplish; *flowers* sessile, solitary or fasciculate, borne in panicles of slender interrupted spikes, the internodes of the spikes 5 to 25 mm. long; *bracts* subtending the flowers subulate, about 2·5 mm. long, 0·5 mm. wide, those subtending the spikes and branches of the inflorescence resembling the stem leaves but smaller, all minutely pubescent, bractlets minute and subulate; *corolla* 12 mm. long, minutely and sparingly pubescent, or glabrate, purple (?), the tube 2·5 mm. long, 1·5 mm. in diameter, the lips equal, 1 cm. long, 3·5 mm. wide, the posterior lip ovate, emarginate, narrowed at base to a slender claw, the anterior lip 3-lobed, the lobes oblong, the middle 2·5 mm. wide, the lateral 4·5 mm. wide; *filaments* about 6 mm. long, sparingly and minutely pubescent; *anthers* barely 1 mm. long, the lobes parallel, slightly unequal; *capsule* 12 mm. long, 4 mm. broad, pointed at apex, narrowed at base to a slender stipe (6 mm. long), glabrous; *seed* flat, 4·5 mm. long, 4 mm. wide, obliquely cordate, both surfaces rather minutely and evenly muricate, white or brown.

Type in the Kew Herbarium, collected on a dry hill at Coyuca, Guerrero, Mexico, January 24, 1934, by G. B. Hinton (no. 5533).

A plant with the facies of *C. glabrata*, but differing from that species in the relative length of the glandular and eglandular hairs of the calyx segments and in the size of the capsule and seed. In *C. mucronata* the eglandular hairs of the calyx are at least twice as long as the glandular ones; in *C. glabrata* the reverse is true. The capsules of *C. glabrata* are only 10 mm. long, with seeds 3 mm. in diameter, but in this new species they are as much as 12 mm. long, with seeds 4·5 mm. long and 4 mm. wide.

Carlowrightia coyucana *Leonard*, sp. nov.; suffrutescens; caules teretes, glabri, apice hirtelli, minute striati; folia breviter petiolata, ovato-lanceolata, apice obtusa, basi rotundata, minute pilosa; spicae multae, graciles; flores sessiles, distantes; bracteae et bracteolae triangulares, minute pubescentes; calycis laciniae triangulares, pubescentes, pilis clavatis minutissimis cum alteris

intermixtis ; corolla pubescens, tubo brevi, labio superiore oblongo-obovato, ungue lato, inferiore trilobo, lobis oblongo-ellipticis apice rotundatis vel obtusis ; capsula stipitata, glabra ; semina plana, minute muricata.

Suffrutescent ; *stems* arising from thick ligneous tap-roots, terete, glabrous below, the upper portions finely striate and densely hirtellous, the hairs white, retrorsely curved, about 0·5 mm. long ; *petioles* up to 2 mm. long ; *leaf blades* ovate-lanceolate, the largest 15 mm. long and 5 mm. wide, obtusish at apex, rounded at base, both surfaces minutely pilosulous ; *flowers* borne in slender interrupted spikes up to 7 cm. long, the flowers sessile, solitary or fasciculate, 2 to 15 mm. distant, the rachis hirtellous with retrorsely curved white hairs about 0·5 mm. long ; *bracts* triangular, barely 2 mm. long, 0·5 mm. wide, minutely pubescent ; *bractlets* about 1 mm. long ; *calyx* 2·25 mm. long, the segments triangular, 1·25 mm. long, less than 0·5 mm. wide, finely pubescent with a mixture of visible slender hairs and microscopic clavate ones ; *corolla* (immature) 7 mm. long, finely pubescent, the tube 2 mm. long, 1 mm. in diameter at base, slightly constricted 1 mm. above base, the lips equal, the posterior lip oblong-obovate, 1·75 mm. wide, minutely bidentate at tip, narrowed at base to a claw 1 mm. wide, the lower lip 3-lobed, the lobes nearly similar, oblong-elliptic, 4 mm. long and about 2 mm. wide, rounded or obtuse at apex ; *capsule* 1 cm. long, 4 mm. broad, pointed at apex, abruptly narrowed to a slender stipitate base (4 mm. long), glabrous ; *seeds* flat, 4 mm. long, 3·5 mm. wide, obliquely cordate, white or purplish, minutely and rather sparingly muricate.

Type in the Kew Herbarium, collected on a plain at Pungarabato, District of Coyuca, Guerrero, Mexico, June 7, 1934, by G. B. Hinton (no. 6129).

In both pubescence and shape of the leaves this new species suggests *C. pubens* Gray, but the inflorescence of the two plants is decidedly different. The flowers of *C. coyucana* are borne in slender interrupted spikes ; in *C. pubens* they are axillary.

From the type material it is impossible to state the height accurately, as the specimens seem to have been gathered from plants grazed over or otherwise injured. The short broken stubs of stems, from which numerous branches arise to a height of 5 to 9 cm. seem to indicate that the original perfect plant may have reached a considerable height. It is possible, also, that mature stem leaves may exceed the dimensions given in description.

Pseuderanthemum axillare *Leonard*, sp. nov. ; herba ; caules erecti, teretes vel compressi, bifariam puberuli vel glabrati ; folia oblongo-ovata, apice acuminata, basi rotundata, utrinque parce puberula vel glabrata, ciliata, petiolis brevibus alatis ; flores fasciculati axillares, breviter pedunculati vel sessiles ; bracteae oblongo-ovatae vel anguste lanceolatae, ciliatae, basi connatae ; bracteolae

similes, lineares ; calycis laciniae lineares, ciliatae, pilosae, pilis brevibus cum alteris intermixtis ; corolla glabra, tubo longo gracili, lobis subaequalibus ovatis ; capsula ovoidea, glabra, basi stipitata.

Herb ; *stem* erect, up to 60 cm. high or more, simple or sparingly branched, terete, or compressed at nodes, puberulous in 2 lines or glabrate, the internodes up to 12 cm. long ; *leaves* soon deciduous, the petioles 3 or 4 mm. long, winged ; *leaf blades* oblong-ovate, 4 cm. long, 1·8 cm. wide, sharply acuminate at apex, rounded at base, firm, sometimes purplish, slightly puberulous or glabrate, ciliate, the hairs up to 0·5 mm. long, the costa and veins (5 or 6 pairs) prominent ; *flowers* borne in short peduncled or sessile axillary fascicles consisting of several clusters of 2 or 3 flowers each, these clusters as well as the fascicles each subtended by a pair of bracts connate anteriorly at base ; peduncles up to 3 mm. long ; *bracts* subtending the fascicles leaflike, up to 2·5 cm. long and 1 cm. wide, the uppermost narrowly lanceolate and much smaller ; *bracts* subtending the flowers linear, the lower 11 mm. long and 1 mm. wide, the upper 4 mm. long, all acuminate, sparingly pilose or glabrate, ciliate ; *calyx segments* linear, 8 mm. long, pilose (the longer hairs eglandular and mixed with minute glandular ones), ciliate, delicately 3- to 7-nerved ; *corolla* 2 to 3 cm. long, glabrous, the tube 1 to 2 cm. long, slender, 1 mm. in diameter, slightly enlarged near mouth, the limb up to 2 cm. broad, the lobes subequal, ovate, up to 11 mm. long and 7 mm. wide, rounded at tip ; *stamens* included, inserted above the middle of the tube, the filaments 1·5 mm. long, glabrous, each with a staminode about 1 mm. long decurrent on its base (one of the staminodes occasionally fertile or partly so) and a third minute free staminode attached to corolla tube between the 2 stamens ; *style* about 2 cm. long, glabrous ; *capsule* ovoid, about 12 mm. long and 5 mm. broad, glabrous, acutish at apex, narrowed to a basal stipe about 3 mm. long ; *seed* (immature) densely covered by irregular projections.

Type in the Kew Herbarium, collected on a prairie at Luvianos, District of Temascaltepec, Mexico, January 24, 1933, by G. B. Hinton (no. 3200).

Pseuderanthemum axillare may be compared with *P. fasciculatum* (Oerst.) Leonard.* It differs from that species in several respects, however. The bracts of *P. fasciculatum* are minute, not more than 3 or 4 mm. long and, like the calyx segments, minutely pubescent or puberulous, with only the hairs at the base of the bracts as much as 0·5 mm. long, whereas in *P. axillare* the lower bracts (except the leaflike outermost ones) are as much as 11 mm. long and both calyx and bracts are more or less hirsute with white spreading hairs up to 0·5 mm. long. Furthermore the leaves of *P. fasciculatum* are much more densely pilose and the seeds are smooth, instead of roughened as in *P. axillare*.

* **Pseuderanthemum fasciculatum** (*Oerst.*) *Leonard*, comb. nov.—*Eranthemum fasciculatum* Oerst. in Nat. For. Kjöbenhavn Vid. Medd. 1854, 166 (1854).

Dicliptera aquatica *Leonard*, sp. nov.; herba vel suffrutex; caules hexagoni, striati, dense pubescentes; folia petiolata, ovata, apice acuta vel acuminata, basi acuta vel obtusa, utrinque sparse puberula; inflorescentia e cymis axillaribus sessilibus vel pedunculatis composita; bracteae exteriores breves, ellipticae, apice aristatae, subcoriaceae, interiores anguste lanceolatae, inaequales, externe dense pubescentes, intus puberulae; bracteolae lineares, ciliatae; calycis laciniae anguste triangulares, subhyalinae, puberulae; corolla parce pubescens, labio superiore breviter trilobo, inferiore oblongo minute emarginato.

Stem herbaceous or suffrutescent, up to 2 meters high, green, hexagonal, the angles marked by whitish striae, densely gray-pubescent, the hairs spreading, about 0·25 mm. long, or a few scattered ones on the angles reaching 1·5 mm., the internodes up to 10 cm. long; *petioles* about 1 cm. long, pubescent; leaf blades ovate, up to 4 cm. long and 2·5 cm. wide, acute or acuminate at apex, acute or obtuse at base, both surfaces sparingly puberulous, the hairs about 0·5 mm. long, curved, those of the lower surface confined chiefly to the costa and lateral veins (5 or 6 pairs); *flowers* sessile or nearly so, borne in clusters of 4 to 6 each, these axillary, sessile or pedunculate; *bracts* subtending the verticillasters elliptic, about 4 mm. long and 2·5 mm. wide, subcoriaceous, ending in a spreading awned tip 1·5 mm. long, the costa and lateral nerves (2 pairs) prominent, the secondary bracts linear-lanceolate, unequal, one of each pair about 1·5 cm. long and 2·5 mm. wide, the other 2 cm. long and 2·5 mm. wide, both densely pubescent without and puberulous within, the costa prominent, the lateral nerves (1 pair) obscure, the bracts subtending the flowers linear, 10 to 11 mm. long, 1·5 mm. wide, subequal, pubescent without, subglabrous within, ciliate; *calyx* 9 mm. long, the segments narrowly triangular-subulate, 7 mm. long, 1·5 mm. wide at base, thin, semitransparent, 3-nerved, puberulous; *corolla* 3 cm. long, sparingly pubescent, the tube 2 to 2·5 mm. in diameter at base, narrowed just above base, thence gradually enlarged to 5 mm. at mouth, the lips subequal, 1·5 cm. long, the lower narrowly emarginate, the upper 3-lobed, the lobes rounded, about 0·75 mm. long; *stamens* barely exserted, the filaments about 14 mm. long, flat, the inner margin ciliate, the anther lobes about 1·5 mm. long; *ovary* glabrous; *style* about 3 cm. long, glabrous or with a few minute hairs near base; *capsule* not seen.

Type in the Kew Herbarium, collected in water, at San Lucas del Maiz, District of Temascaltepec, Mexico, February 4, 1933, by G. B. Hinton (no. 3337).

This new species more nearly approaches *D. pedunculariis* Nees than any other, but differs in the character of the flowers and pubescence. The corollas of *D. pedunculariis* are described as scarcely twice as long as the involucre, whereas in *D. aquatica* they are sometimes three times as long. *D. aquatica* is further marked by

its dense gray pubescence. In *D. peduncularis* the stems and bracts are said to be hirsute or glabrous.

The color of the flower is not apparent in the dried material of the type. Since this consists of the tips of plants, the leaf measurements above stated may have to be increased with the collection of more adequate material.

Buceragenia hirsuta *Leonard*, sp. nov. ; herba ; caules subteretes, bifariam minute puberuli ; folia oblongo-ovata vel late lanceolata, apice acuminata, basi angustata, in petiolum longe decurrentia utrinque parce et minute puberula ; spicae graciles, interruptae, terminales, rhachi parce hirsuta ; bracteae bracteolaeque subulatae, carinatae, subglabrae, marginibus subhyalinis minute ciliolatis ; calycis laciniae subulatae, minute pubescentes ; corolla minuta ; capsula hirsuta ; semina 4, muricata.

Herb up to 50 cm. high ; *stem* branched, subterete, minutely puberulous in two lines, the glabrous portion with numerous small parallel cystoliths ; *leaf blades* oblong-ovate to broadly lanceolate, up to 10 cm. long and 3·5 cm. wide, acuminate at apex, narrowed into a slender winged petiole at base, thin, both surfaces sparingly and minutely puberulous, the costa and lateral veins (6 to 7 pairs) prominent, whitish ; *flowers* borne in interrupted spikes or spicate racemes up to 10 cm. long terminating the stem and branches, the rachis flattened at the nodes, minutely and sparingly puberulous with curved hairs ; *bracts* and *bractlets* subulate, about 3·5 mm. long and 0·5 mm. wide at base, carinate, subglabrous, the subhyaline margins minutely ciliolate, the costa prominent ; *calyx segments* subulate, 4·5 mm. long, 0·5 mm. wide at base, minutely but rather sparingly pubescent ; *corolla* about 3 mm. long, tubular, slightly enlarged below, the lobes rounded, bearing several erect or spreading hairs on the outer surface ; *stamens* included, the filaments less than 1 mm. long ; *staminodes* very minute ; *capsule* 15 mm. long, 4 mm. broad, acute at tip, narrowed to a solid stipitate base about 6 mm. long, minutely but rather sparingly hirsute ; *retinacula* subulate about 2 mm. long ; *seeds* 4, flat, suborbicular, strongly muricate, brownish.

Type in the Kew Herbarium, collected in a wet barranca at Nanchititla, District of Temascaltepec, Mexico, altitude 1100 metres, December 8, 1933, by G. B. Hinton (no. 5318).

Buceragenia hirsuta may be separated from *B. minutiflora* Greenm. by its narrower leaf blades and hirsute capsules. In *B. minutiflora* the leaves are broadly ovate and the capsules glabrous.

Jacobinia capitata *Leonard*, sp. nov. ; herba vel suffrutex ; caules subteretes, glabri vel apice subtomentosi ; folia ovata vel elliptica, apice obtusa, basi angustata, integra, supra parce strigosa, subtus parce pilosula, petiolis tenuibus ; spicae breves, terminales, floribus congestis ; bracteae ovatae vel obovatae, obtusae vel rotundatae, strigosae, ciliatae, basi albidae ; bracteolae oblongae,

acutae, subhyalinae, ciliatae ; calycis laciniae oblongae, subhyalinae ; corolla pubescens, labio superiore minute bilobo, inferiore apice trilobo.

Herbaceous or *suffrutescent*, height unknown ; *stems* subterete, glabrous or the upper portions subtomentose ; *petioles* slender, 1 to 2 cm. long, sparingly pilose or tomentose ; *leaf blades* ovate or elliptic, up to 11 cm. long and 6·5 cm. wide, obtusish or rounded at apex, narrowed at base, entire, sparingly strigose above, the hairs about 0·5 mm. long, sparingly pilosulous beneath, the hairs confined chiefly to the costa and lateral veins (6 or 7 pairs) ; *flowers* borne in a short terminal capitate spike about 2 cm. long (exclusive of corollas) ; lower pairs of *bracts* up to 4 cm. long and 2·5 cm. wide, leaflike, the upper obovate, 1 to 2 cm. long, 0·5 to 1 cm. wide, rounded at apex, narrowed at base, strigose, ciliate, the marginal hairs up to 1·5 mm. long, the lower portion of all the bracts whitish ; *bractlets* oblong, 7 to 9 mm. long, acute, thin, subhyaline, ciliate ; *calyx* up to 7 mm. long, the segments subhyaline, acute, glabrous or with a few hairs on the costa ; *corolla* up to 4·5 cm. long, pubescent, the hairs up to 0·5 mm. long, the tube 2 mm. in diameter at base, slightly narrowed above base, thence gradually enlarged to 5 mm. at throat, the lips oblong, the upper 2·7 cm. long, about 5 mm. wide, minutely bidentate at apex, the lower oblong-obovate, 2·2 cm. long, 8 mm. wide, 3-lobed, the lateral lobes 1 mm. long and 0·5 mm. wide, rounded, oblique, the middle lobe 0·5 mm. long and about 2 mm. wide, cucullate ; *stamens* reaching the tip of the upper lip ; *anthers* about 3 mm. long and 1 mm. broad, the sacs unequally attached ; upper portion of *style* enclosed (or partially so) by thin transparent wings of the median pair of nerves of the corolla, the stigma discoid, sometimes embedded in the tissue of the upper lip ; *capsule* not seen.

Type in the Kew Herbarium, collected at Cerro Muñeca, District of Temascaltepec, Mexico, altitude about 2300 metres, August 13, 1932, by G. B. Hinton (no. 1354).

Apparently unrelated to any other Mexican member of the genus. The colour of the corolla is not apparent in the dried material.

Beloperone longibracteata *Leonard*, sp. nov. ; herba ; caules teretes, striati, apice parce puberuli ; folia lanceolata, utrinque acuminata, hirsuta ; verticillastri approximati vel infimus distans ; bracteae erectae, spathulatae, apice obtusae vel rotundatae, parce hirsutae vel glabratae ; calycis laciniae subaequales, lanceolatae, margine albae, parce pubescentes vel glabratae ; corolla bilabiata, labio superiore erecto lineari apice bilobo, lobis parvis acuminatis, inferiore patente trilobo, lobis magnis oblongo-ovatis vel obovatis, apice rotundatis.

Herb ; *stems* terete, finely striate, puberulous, the hairs scattered, minute, retrorsely appressed except at the nodes, here long and spreading ; *internodes* up to 12 cm. long ; *petioles* about 1 cm. long, slender, pilosulous ; *leaf blades* lanceolate, up to 10 cm. long and

2·2 cm. wide, acuminate at both ends, rather densely hirsute above and beneath (hairs spreading, 0·5 to 0·75 mm. long), the costa and lateral nerves (6 or 7 pairs) prominent; *flowers* borne in dense approximate verticillasters, these forming a terminal spikelike inflorescence up to 10 cm. long and 2 cm. in diameter, the lowermost verticillaster sometimes distant; *bracts* erect, spatulate, up to 16 mm. long, 1·5 to 2·5 mm. wide near tip, rounded or obtuse at apex, gradually narrowed to base, firm, sparingly hirsute or glabrate, ciliate; *calyx segments* subequal, lanceolate, about 12 mm. long, 1·75 mm. to 2 mm. wide, sparingly pubescent or glabrate, white-margined; *corolla* purple when dry, sparingly pubescent, about 4 cm. long, the tube 1·5 cm. long, 3 mm. broad at base, slightly constricted above base, 4·5 mm. wide at throat, the upper lip erect, linear, 4 mm. wide at base, gradually narrowed to a slender acuminate 2-lobed tip, the lobes about 1·3 mm. long, the lower lip spreading, slightly shorter than the upper, 3-lobed, the lobes about 12 mm. long, the middle lobe oblong-ovate, 6·6 mm. wide, the lateral narrowly obovate, about 5 mm. wide, all rounded at apex; *stamens* reaching tip of upper lip; *anthers* 2·5 to 3 mm. long, unequally attached, the lower lobe calcarate, the spur white, about 0·5 mm. long; *ovary* glabrous.

Type in the Kew Herbarium, collected at Tenayac, District of Temascaltepec, Mexico, altitude 1480 metres, October 20, 1932, by G. B. Hinton (no. 2159).

Beloperone longibracteata and *B. violacea* Planch. et Lind. are closely allied. They differ, however, in the size of the bracts and in leaf-shape. The bracts of *B. violacea* rarely exceed 12 mm. and the leaves are of an ovate type, rather than lanceolate as in *B. longibracteata*.

XI—A NOTE ON CERTAIN MALAYAN SPECIES OF SINDORA.

C. F. Symington (Kepong, Federated Malay States).

An attempt to discover what exactly was *Sindora intermedia* has necessitated reference to the earliest descriptions and types of Peninsular species of the genus *Sindora*, and has revealed a state of very considerable confusion existing with respect to the botanical conception of four of our species. The species concerned are *Sindora Wallichii* Benth. emend. Prain, *S. Echinocalyx* Prain, *S. velutina* Baker, and *S. parvifoliola* Sym. In this note I shall recount the botanical history of these species and endeavour to enumerate the diagnostic characters through which future confusion may be avoided.

The earliest Malay Peninsula collection of *Sindora* with which we are here concerned is *Wallich* 5805. This was a fruiting collection named *Guilandina Wallichiana* by Graham in Wall. Cat. Herb. Ind. In 1867 Bentham described and figured his *Sindora Wallichii* in Hook. Icon. Plant. tt. 1017 and 1018, basing his description on

Wallich 5805 and a flowering collection of *Griffith* from Malacca (K.D. 1848). This Griffithian collection actually represents another species which, as we shall see, later formed the basis of *S. Echinocalyx* Prain.

In the preparation of the account in Hook. fil. Fl. Brit. Ind. **2** : 268 (1878), Baker described in addition to *S. Wallichii* Benth. two varieties, var. *siamensis* (reducing *S. siamensis* Teysm. ex Miq. to varietal rank) and var. *intermedia*, and a new species *S. velutina*. He was, however, responsible for considerable confusion. Not only did he accept Bentham's citations under *S. Wallichii* as one species but he cited also a collection of *Maingay's* from Malacca (presumably 1189 (K.D. 561), frt.) which represents yet another species, namely *S. parvifoliola* Sym. His *S. Wallichii* var. *intermedia* was based on a flowering collection by *Maingay* from Malacca (No. 3142, K.D. 562) which is actually the flower of *S. Wallichii* Benth. emend Prain.* This specimen had been given the manuscript name of *S. Wallichii* var. *ovalifolia* by Maingay as also had *Maing.* 1624 (K.D. 562/1), a flowering collection of the same species.

In 1897 Prain (Journ. Asiat. Soc. Bengal **66,** 2 : 203 & 481) endeavoured to correct the confusion under *S. Wallichii* by removing the Griffithian collection (K.D. 1848) and on it founding a new species *S. Echinocalyx*. Under *S. Wallichiana* (he reverted to Graham's rendering of the specific epithet !) he cited *Wall. Cat.* 5805, *T. Anderson* 41 (sterile) and another Griffithian collection from Malacca (fl.) which exhibited the large foliaceous stipules which he considered a good diagnostic character. This last specimen is *S. Echinocalyx*, although it has much larger leaves than the type on which the species was founded. Under *S. Echinocalyx* Prain cited, in addition to *Griffith* (K.D. 1848), *Maingay* 1624 (K.D. 562/1) which is actually a flowering collection of *S. Wallichii* Benth. emend. Prain, thus confusing under *S. Echinocalyx* precisely the same two species confused by Bentham under *S. Wallichii*. Prain elevated Baker's two varieties to specific rank, citing under *S. intermedia* (Baker) Prain *Maingay* 3142 (K.D. 562), the type, *Curtis* 1630 (frt.), *Scortechini* s.n., Perak (fl.), and *Scortechini* 1064.† The last, which is represented only in the Calcutta herbarium, is *S. Echinocalyx*, but the others are all conspecific with *S. Wallichii* Benth. emend. Prain.

In the Fl. Mal. Penins. **1** : 637, *S. Echinocalyx* Prain is reduced to *S. Wallichii* Benth., but *S. intermedia* is recognized as a distinct species " near *S. Wallichii*, but more tomentose, with stouter panicle and fewer and thicker spines on calyx." It would appear that the author had *S. Wallichii* Benth. emend. Prain mainly in mind as *S. intermedia*, but from a consideration of the specimens

* In the Kew herbarium another sheet of *Maingay's*, no. 1189 (K.D. 561/2), flower, appears also to have been named var. *intermedia* by Baker, but this is *S. parvifoliola* Sym.

† I presume this must be the specimen named by Scortechini *S. Wallichii* (vide Prain in l.c. 205 and 482).

cited it is evident that the species *S. Wallichii* Benth. emend. Prain and *S. Echinocalyx* Prain were inextricably mixed. Under *S. Wallichii* is cited " Singapore, Gardens " which is *S. siamensis* Teysm. ex Miq., and " Dindings (Fox) " and " Tanjong Agas (Foxworthy) " which are *S. Echinocalyx* Prain. Under *S. intermedia* are cited " B'lakang Mati (Murton) " and " Province Wellesley (Fox) " which are *S. Wallichii* Benth. emend. Prain, and " Singapore, Changi," " Johor, Gunong Pantai," and " Dindings, Lumut " which are *S. Echinocalyx* Prain.

The synonymy of these two species is as follows :—

Sindora Wallichii *Benth.* emend. Prain (sub *S. Wallichiana*) in Journ. Asiat. Soc. Bengal, **66**, 2 : 203 et 481 (1897).—*Guilandina Wallichiana* Grah. in Wall. Cat. *Sindora Wallichii* Benth. in Hook. Icon. Plant. (1867) quoad *Wallich* 5805, non quoad *Griffith* (K.D. 1848) ; Baker in Hook. f. Fl. Brit. Ind. **2**, 268 (1878) quoad *Wallich* 5805 et var. *intermedia*, non quoad *Griffith* (K.D. 1848) et *Maingay* 1189 (K.D. 561) et excl. var. *siamensis* ; Ridley, Fl. Mal. Penins. **1**, 637 (1922), partim. *Galedupa Wallichiana* Prain MS., fide King. *Galedupa intermedia* Prain MS., fide King. *Sindora Wallichii* var. *ovalifolia* Maingay MS. *Sindora Echinocalyx* Prain in l.c. 204 et 481 quoad *Maingay* 1624 (K.D. 562/1), non quoad *Griffith* (K.D. 1848). *Sindora intermedia* Prain in l.c. 204 et 482 ; Ridley, op. cit. 638, partim.

Sindora Echinocalyx *Prain* in l.c. 204 et 481 quoad *Griffith* (K.D. 1848), excl. syn. *S. Wallichii* var. *ovalifolia* Maing. (MS.).—*Echinocalyx* (gen.) Benth. in Benth. et Hook. f. Gen. Pl. **1**, 584 (1865). *Sindora Wallichii* Benth. in l.c. quoad *Griffith* (K.D. 1848) ; Baker in l.c. quoad *Griffith* (K.D. 1848), excl. *Wallich* 5805 et *Maingay* 1189 (K.D. 561) ; Ridley, op. cit. 637, partim. *Galedupa Echinocalyx* Prain MS., fide King. *Sindora intermedia* Ridley, op. cit. 638, partim.

Differentiation between S. Wallichii and S. Echinocalyx. Having studied, to the best of my knowledge, all the existing Peninsular material of *S. Wallichii* and *S. Echinocalyx*, I find little difficulty in distinguishing these species, but it must be admitted that they are extremely alike, indeed indistinguishable, in many respects. I find that the diagnostic characters of previous authors as a rule do not hold, but the following characters are reliable. In *S. Wallichii* the main nerves and reticulations of the leaflets are evident on the lower surface only, the upper surface being smooth and shining ; in *S. Echinocalyx* they are evident on both surfaces. In *S. Wallichii* the rhachis of the inflorescence is rather stout and zig-zag ; in *S. Echinocalyx* it is more delicate and straight. In the flower of *S. Wallichii* no ovarian spines are evident while in *S. Echinocalyx* they appear as small white maggots.

Prain has stated that his *S. intermedia* is at once distinguished by its oblique transverse pods from both of the species placed under *S. Wallichii* by Bentham, but examination of the relevant material

A = *Sindora Wallichii* Benth. emend. Prain, B = *Sindora Echinocalyx* Prain. 1, flowering twig; 2, flower bud; 3, flower with sepals and petal removed; 4, calyx segments; 5, petal; 6, twigs with persistent stipules; 7, fruits. (Drawings of A 1–5 based mainly on *C.F.* 4793; A 6 on *Holttum* 15345; A 7 on *C.F.* 17235; B 1–5 on *C.F.* 6692; B 6 on *C.F.* 29782; B 7 on *C.F.* 27773. Scale applies to 1, 6, and 7 only.)

does not entirely bear this out. We now have a few fragmentary fruiting collections of *S. Echinocalyx* and the pods are markedly oblique as opposed to sub-equal in most specimens of *S. Wallichii* Benth. emend. Prain.

Prain also credits *S. Echinocalyx* with " inconspicuous " stipules as opposed to the " large foliaceous " stipules of " *S. Wallichiana.*" Recent collections, however, show that both species have caducous foliaceous stipules.

Collections of *S. Wallichii* and *S. Echinocalyx* examined (all are from the Malay Peninsula) :—

Sindora Wallichii.—*Wallich* 5805 (Kew and Calcutta ; auth. spec. of *S. Wallichii* Benth. emend. Prain) ; *Maingay* 1624 (K.D. 562/1—Kew and Calcutta) ; *Maingay* 3142 (K.D. 562—Kew and Calcutta) ; *Maingay* 3143A (K.D. 562—Kew) ; *Scortechini* s.n. (Kew and Calcutta) ; *Kurz* s.n. (Calcutta) ; *T. Anderson* 41 (Kew and Calcutta) ; *Curtis* 1630 (S'pore) ; *Murton* s.n. (S'pore) ; *Holttum* 15345 (S'pore) ; *S'pore Field No.* 1303 (Calcutta and S'pore) ; *C.F.* 4793 and 13775 (S'pore and Kepong) ; *C.F.* 10430, 10466, 17235 23379, 24924, 25213, and 29388 (Kepong).

Sindora Echinocalyx.—*Griffith* s.n. (K.D. 1848—Kew and Calcutta ; auth. spec. of *S. Echinocalyx* Prain) ; *Griffith* s.n. (Calcutta) ; *Scortechini* s.n. and 1064 (Calcutta) ; *Fox* s.n., *Alvins* 1189, *Ridley* s.n. Gunong Panti, *Ridley* s.n. Lumut, *Baker* s.n. Changi, *Burkill* 896, and *Holttum* 9350 (S'pore) ; *C.F.* 557, 18283, and 27773 (S'pore and Kepong) ; *C.F.* 6692, 6834, 14175, 14378, 16712, 18284, 18297, 25261, 28538, 28605, 29658, 29727, 29871, 30094, 30693, 32669, 32743, 32803, and 32875 (Kepong).

SINDORA PARVIFOLIOLA Sym.—To complete this note I am giving a description of a third species I have had occasion to mention, namely *S. parvifoliola.* This species occurs in Sumatra and Borneo, as well as in the Malay Peninsula. Collections from Sumatra and Borneo were named *S. parvifolia* by C. A. Backer, but the name was never validly published, although it appears as a *nomen semi-nudum* in Heyne, Nutt. Plant. Ned. Ind. (1927 edit.) : 729. Several collections of the same species have been made in the Malay Peninsula, the earliest being those of Maingay [No. 1189 (K.D. 561 and 561/2)] already mentioned. I have chosen to re-name the species *S. parvifoliola* in preference to validating Backer's less appropriate epithet.

Sindora parvifoliola *Symington*, sp. nov. *Sindora Wallichii* sensu Baker in Hook. f., Fl. Brit. Ind. **2** : 268 (1878), quoad *Maing.* 1189 (K.D. 561), non *S. Wallichii* auct. ? *Sindora velutina* sensu Merrill, Pl. Elmer. Born. 99 (1929), non *S. velutina* Baker. *Sindora parvifolia* Backer ex Heyne, Nutt. Plant. Ned. Ind. ed. 2, **1**, 729 (1927), nomen semi-nudum.—*S. velutinae* Baker valde affinis, sed omnibus partibus minoribus differt.

Branchlets densely tawny tomentose when young, later becoming glabrous and dark. *Leaves* paripinnate, rhachis about 6–12 cm. long, tawny tomentose to glabrescent and dark ; stipules not seen ; leaflets 4–6 pairs, elliptical to oblong or oblong-lanceolate, acute or acuminate at the apex, rounded or subacute at the base, margins slightly raised, about 3 × 1·25 cm. to 7·5 × 3 cm., the lower pairs being slightly smaller than the upper, glabrous and shining on the upper surface, densely golden tomentose to sparsely hairy beneath, midrib sunk above, strongly elevate beneath, main nerves hardly visible above, faintly visible numerous and irregular beneath ; minute reticulations visible above and beneath except in densely tomentose specimens ; petiolules 1·5 mm. long, densely tomentose to glabrous. *Panicles* axillary or terminal, solitary or 2 or 3 together, usually as long as or shorter than the leaves, racemose, densely fulvous-golden tomentose ; branchlets solitary or in pairs, up to 5 cm. long, each with about 3–15 (the lower usually fall immaturely) subdistichous flowers ; bracts ovate-acute, about 5 mm. long, densely sericeous-golden tomentose, early caducous. *Flowers* 3–5 mm. apart, ellipsoid-obovoid in bud, about 7–12 mm. long including the pedicel ; pedicel about 2 mm. long, densely tomentose ; bracteoles minute, lanceolate, tomentose, caducous. *Calyx*-tube very short, lobes 4, elliptical, obtuse or subacute, concave, the posterior lobe broader than the others, golden tomentose outside and inside. *Petal* 1 (rudimentary petals not seen), oblong, obtuse, as long as the calyx lobes, hairy outside, glabrous within. *Stamens* 10 ; the posterior one free with short glabrous filament and no anther ; the remainder monadelphous, tubular portion densely hairy, free portions glabrous, declinate, exceeding the sepals, the lateral stamens longer than the anterior ones ; anthers oblong, versatile. *Ovary* oblique, densely hirsute ; style filiform, spirally twisted ; stigma small, capitate. *Fruit* rotundate or oblong-rotundate, subequally rounded at base, beaked at far end of long axis, up to 12 × 8 cm. but usually smaller, sparsely tawny hairy to puberulous and dark, minutely warty and furnished with strong sharp spines about 3 mm. long ; beak stout, up to 1 cm. long or rudimentary, curved in the opposite direction from the insertion of the stalk ; stalk fairly stout, inserted at an acute angle to the long axis of the fruit ; seeds 1 or 2 (in pods examined) ; funicle thick arillate.

The similarity between *S. parvifoliola* and *S. velutina* is so marked that the former might quite reasonably be considered as a variety of *S. velutina*. I am inclined to consider, however, that specific differentiation is justified.

The specimen cited by Merrill under *S. velutina* in his enumeration of Elmer's Bornean plants is probably *S. parvifoliola*, but the leaves are slightly larger and less tomentose than usual.

The following collections have been examined :—

Malay Peninsula. Kedah : *C.F.* 20795. Kelantan : *C.F.* 32807 & 33423. Pahang : *C.F.* 4192 (type of *Sindora parvifoliola*

Sym.) ; Forester Bidin, Kuala Rompin, 25th Sept. 1921. Also *C.F.* 3554, 4058, 4187, 15436 & 29559. Selangor : *C.F.* 1200 & 38140. Malacca : *Maingay* 1189 (K.D. 561 & K.D. 561/2) ; *C.F.* 4378.

SUMATRA. *Grashoff* 1057 ; *Lambak* 1359 ; *John* (?) 850.

BORNEO. *Proefst.* bb. 9473, 13039 & 14172 ; ? *Elmer* 21363.

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XII—THE BOTANICAL NAME OF THE DOUGLAS FIR.

T. A. SPRAGUE AND M. L. GREEN.

The case of the Douglas Fir illustrates the great importance of bibliographical research in stabilizing plant nomenclature. All who have seriously studied the subject realize that compliance with International Rules is the only way of obtaining relative consistency and uniformity in plant names. The principle of priority of publication is used in order to choose between two or more alternative names for the same plant, and the application of this principle depends on the data supplied by the bibliographer. The position as regards the Flowering Plants is peculiarly favourable owing to the existence of the monumental "Index Kewensis." The exhaustive character and high standard of accuracy of the original Index will always compel admiration, but from time to time omissions are detected, and one of these, just discovered by Professor Rehder, is the earliest legitimate name for the Douglas Fir, namely, *Abies taxifolia* Poir. This bibliographical discovery now enables us to retain the well-known name *Pseudotsuga taxifolia* for the Douglas Fir.

Prior to the Vienna Congress two names were in use for the Douglas Fir, namely, *Pseudotsuga Douglasii* under the so-called "Kew Rule" and *Ps. taxifolia* under the Paris "Lois" (1867). In 1905 the principle of the acceptance of the earliest specific epithet for each species (except where the resulting combination was already in use for another species) was embodied in the International Rules of Botanical Nomenclature, according to which the Douglas Fir was known as *Ps. taxifolia* (Lamb.) Britt.

The twenty-five years that elapsed between the Vienna and Cambridge Congresses gave ample opportunity for studying the effects of the Rules on plant nomenclature, and it was found that certain changes were desirable. Among these was the rejection of later homonyms, that is, when a particular name was validly published for one type it could not subsequently be used for a different type even when the first use had been discarded. Under this provision a great deal of uncertainty and disagreement regarding

homonyms was removed, but certain well-known names had unfortunately to be altered, amongst them apparently that of the Douglas Fir. As will be seen later, this change has proved to be unnecessary owing to Professor Rehder's discovery.

Under Art. 61 of the International Rules the name *Pinus taxifolia* Lamb. is illegitimate because it is a later homonym of *P. taxifolia* Salisb. Under Art. 45 only epithets published in legitimate combinations are taken into account for purposes of priority, and the combination *Pseudotsuga taxifolia* (Lamb.) Britt. accordingly cannot stand since it was based on an illegitimate name. If in the meantime the Douglas Fir had received no legitimate epithet, Britton's new combination would have been retained under Art. 69 as a new name dating from 1889. It is, however, antedated by the names *Abies mucronata* Rafin. (1832) and *Abies Douglasii* Lindl. (1833). It therefore appeared that the correct name for the Douglas Fir was *Pseudotsuga mucronata* (Rafin.) Sudw. (1895).

Now, however, Professor Rehder has traced the name *Abies taxifolia* Poiret in Lam. Encycl. Méth. **6,** 523 (1804), which had been overlooked in the compilation of the Index Kewensis. *Abies taxifolia* Poir. was actually a new combination for *Pinus taxifolia* Lamb. (1803) non Salisb. (1796), and as such was invalid, but as a new name it is valid under Art. 69, since Poiret was at liberty to adopt the epithet *taxifolia* although it had previously been given to the species in an illegitimate combination. Of the three epithets bestowed on the Douglas Fir, *taxifolia* as the earliest must be retained, and the Douglas Fir must accordingly be known as *Pseudotsuga taxifolia* (Poiret) Rehder. This name is not rejected as a later homonym of *Ps. taxifolia* (Lamb.) Britton, as both names were based on the *same type.* "A later homonym is one which duplicates a name previously and validly published for a group of the same rank based on a *different type* (Art. 61). The type of both names is the specimen collected by Menzies on the north-west coast of America.

The synonymy of *Ps. taxifolia* is as follows :—

Pseudotsuga taxifolia (*Poir.*) *Rehder,* comb. nov.

Pinus taxifolia Lamb. Pinus, **1,** 51, t.33 (1803), non Salisb. (1796)—illegitimate name under Art. 61.

Abies taxifolia [(Lamb.)] Poir. in Lam. Encycl. **6,** 523 (1804)—legitimate name under Art. 69.

Abies mucronata Rafin. in Atlant. Journ. **1,** 120 (1832).

Abies Douglasii Lindl. in Penny Cycl. **1,** 32 (1833).

Pseudotsuga Douglasii (Lindl.) Carr. Traité Conif. ed. 2, 256 (1867).

Pseudotsuga taxifolia (Lamb.) Britton in Trans. N.Y. Acad. Sc. **8,** 74 (1889).

Pseudotsuga mucronata (Rafin.) Sudw. in Contrib. U.S. Nat. Herb. **3,** 266 (1895).

XIII—MISCELLANEOUS NOTES.

Alfred Barton Rendle.—The death of Dr. A. B. Rendle at his home at Leatherhead on January 11th, only eight days before his seventy-third birthday, will be regretted by the wide circle of those who knew him personally or were acquainted with his many sided activities, scientific and social. Born in London on January 19th, 1865, he was educated at St. Olave's School, Southwark, and St. John's College, Cambridge, and in 1888 was appointed Assistant in the Department of Botany at the British Museum (Natural History), becoming Keeper in 1906, in succession to George Murray, and retiring in 1930 under the age limit. He was elected a Fellow of the Royal Society in 1909.

Rendle's first scientific communication, written while still at Cambridge, was a note on the occurrence of starch in the onion (Ann. Bot. **2,** 224 : 1888). His name appears as a contributor to the " Journal of Botany " in every annual volume from 1889 to 1937 inclusive, and he edited the " Journal " from 1924 till his death. He had charge of the Monocotyledons and Apetalae at the British Museum, and one of his early pieces of work was the re-arrangement of the *Bromeliaceae* according to Baker's " Handbook " (*vide* Journ. Bot. 1890, 27). He also worked on certain families of *Gamopetalae*, such as the *Asclepiadaceae*, *Convolvulaceae* and *Acanthaceae*.

Two families of Monocotyledons to which Rendle paid special attention, without doing monographic work on either, were the *Gramineae* and the *Orchidaceae*. He was responsible for the enumeration of the *Gramineae* in the " Index Florae Sinensis " (Journ. Linn. Soc., Bot. **36,** 319–449 : 1904), and for the Monocotyledons and Gymnosperms in the Catalogue of Welwitsch's African Plants (1899). In the latter work alone he described 116 new species and varieties of *Gramineae*, including 29 of *Eragrostis*. In addition to working out the *Orchidaceae* of various African expeditions, Rendle collaborated with the late William Fawcett in the description of the *Orchidaceae* for the " Flora of Jamaica " and in the preparation of volumes 3–5 (1914–1926) of that work (Dicotyledons, pts. 1–3). After his retirement he completed vol. 6 (Dicotyledons, pt. 5 : 1936) which had been begun by the late Spencer Le Marchant Moore, and he was engaged on the remaining volume of Dicotyledons at the time of his death.

Rendle's " Classification of Flowering Plants " is a scholarly work in which the systematic descriptions of families are accompanied by interesting notes on morphology, anatomy, pollination, etc., and an account of the tendencies and various types found in each family. The first volume, comprising the Gymnosperms and Monocotyledons, appeared in 1904, and the second one, covering the Dicotyledons, nearly twenty-one years later. A second edition of vol. 1 was issued in 1930.

Among other subjects which claimed his attention were Nomenclature and Bibliography. He published bibliographical notes on

Swartz's "Prodromus" (Journ. Bot. 1897, 20), Steudel's "Synopsis Plantarum Glumacearum" (*op. cit.* 1899, 33), and Browne's "Natural History of Jamaica" (*op. cit.* 1912, 129), and edited the second edition of Britten and Boulger's useful "Biographical Index of deceased British and Irish Botanists."

Rendle fully realized the basic importance of botanical nomenclature, although the subject was one which did not appeal very strongly to him. He attended the discussions on Nomenclature at the International Botanical Congress held at Vienna in 1905, and was appointed a member of the Editorial Committee of the International Rules, a position which he retained until his resignation in 1935. In this capacity he was responsible for the English text of the third edition of the Rules.

In 1888, just after his appointment to the British Museum, Rendle became a Fellow of the Linnean Society of London, and served on the Council for four periods. He was elected Botanical Secretary in 1916, retaining this office till his election as President in 1923. Rendle was a regular attendant at the Society's Meetings, and contributed numerous papers to its Journal (Botany) in addition to one or two which appeared in the Transactions, such as his "Systematic Revision of the Genus Najas" (Trans. Linn. Soc., Ser. 2, Bot. **5**, 379-436: 1899). This was followed by his account of the family *Najadaceae* for Engler's Pflanzenreich (1901).

Rendle regularly attended the annual meetings of the British Association for the Advancement of Science, and was President of Section K (Botany) at Newcastle in 1916. He was President of the South London Botanical Institute from its foundation in 1911 till the date of his death, and was Chairman of the Botanical Section of the South-Eastern Union of Scientific Societies. For many years he was Lecturer in Botany at the Birkbeck Institute, and he took a prominent part in the scientific activities of the Royal Horticultural Society.

Always dignified and courteous, though not suffering fools gladly, Rendle made an admirable Chairman. His life was very full, and he will be greatly missed, not only in botanical circles.

T. A. SPRAGUE.

William Bywater Grove.—By the death of Mr. W. B. Grove, M.A., M.Sc. which took place on January 6th, in his 90th year, Britain has lost one of its most outstanding mycologists of the past fifty years.

William Bywater Grove was born in Birmingham in 1848, and was educated at King Edward's Grammar School. His strong subjects were classics and mathematics, and he obtained an Exhibition and a Scholarship to St. Catharine's College, Cambridge. He took his degree in 1871 in Mathematics, ranking *senior optime* in the mathematical Tripos part II. At that time there was no botanical teaching at Cambridge, but he had begun the study of

botany privately about 1868. After leaving Cambridge he taught first in private schools, and then in the Birmingham High School for Boys, of which in 1887 he became Head Master. When the Boys' School was closed in 1900 he became lecturer in botany and chemistry at Studley Horticultural College, where he remained until 1908. From 1905 to 1927 he was lecturer in botany at the Birmingham Municipal Technical School, and for some years he was Honorary Keeper of the Herbarium at Birmingham University. In 1936 he was granted the honorary degree of M.Sc. in recognition of his services to science and to Birmingham University.

Grove took up the study of fungi in 1881. His first mycological paper was written in 1882 and dealt with the classification of the Uredineae, a group on which he later became an authority. In 1884 he published in the Midland Naturalist a monograph of the Pilobolidae, which fifty years later (in Buller, Researches on Fungi, VI. 1934) he revised and brought up to date. A long series of miscellaneous papers and notes followed, of which may be mentioned the records of " New or Noteworthy Fungi " which appeared in the Journal of Botany from 1884 onwards, and a series of critical monographs on certain genera of the Fungi Imperfecti, which were the outcome of his studies in the Kew Herbarium and appeared in the Kew Bulletin between 1917 and 1923. His book on the British Rust Fungi was published in 1913 and is still a standard work of reference. His many years of work on the Fungi Imperfecti culminated in the two volumes entitled " British Stem and Leaf Fungi (Coelomycetes)," the first of which appeared in 1935 and the second in 1937. This work is a critical compilation of all British records of Sphaeropsidales and Melanconiales known to Grove, based on his long experience of these fungi in the field and in herbaria, and it is no exaggeration to say that Grove was the only person in this country who could have produced it. Within its limits it is most valuable to mycologists and plant pathologists alike.

Some years ago, through the instrumentality of Professor A. H. R. Buller, Grove was persuaded to use his classical knowledge in the preparation of a translation from the Latin of the three quarto volumes of the Selecta Fungorum Carpologia of the brothers Tulasne. This was produced, with collotype reproductions of the original beautiful copperplate engravings, by the Oxford University Press in 1931. The preparation of this work occupied five years of Mr. Grove's leisure time, during which his own mycological work had to remain in abeyance.

Mr. Grove was essentially a field naturalist and a keen observer, of a type now unfortunately rare. Although interested especially in microfungi, he had a good field knowledge of the larger fungi, as well as of flowering plants, mosses and ferns. He was in great demand during collecting expeditions made by the students at Birmingham. Being a born teacher, he was able to impart to his students some of his own enthusiasm, which he kept to the last.

He will be greatly missed by his many friends and students whom he helped over their first mycological difficulties. Kew is fortunate in having his collection of Coelomycetes, which was the basis of his last book. E. M. WAKEFIELD.

Charles Gilbert Rogers.—We greatly regret to have to record the death of Mr. Gilbert Rogers, which occurred at Woking on the 25th November. After a distinguished course at the Royal Indian Engineering College, Coopers' Hill, of which institute he became a Fellow, Rogers joined the Indian Imperial Forest Service in 1888, being posted as Assistant Conservator in the Bengal Presidency. In 1890 he was selected to be an Instructor at the Indian Forestry School at Dehra Dun, and later was placed in charge of the important Andamans Islands Division. In 1906 he was transferred as Conservator of Forests to the Central Provinces, and in 1910 in a similar capacity to Burma, where he filled the post of Chief Conservator from 1913 until he retired from the Forest Service in 1919. In 1920 he was appointed as Director of Forest Studies in the United States of America, to be in control of certain probationers to the Indian Forest Service who had been deputed to learn the American methods of lumbering. Some years earlier he had written a Manual of Forest Engineering in India. On retirement his services were recognised by the award of C.I.E.

He was a keen naturalist, particularly on the botanical side. During the period of his Indian service he had carried out considerable plant collecting and he eagerly embraced the opportunity offered by a visit to his brother, Canon Rogers, of Nairobi, to collect plants and seeds in the high mountains of Kenya Colony. He sent many herbarium specimens, seeds and living plants to Kew, and raised and cultivated the " giant " lobelias very successfully in his garden in East Sussex. His name is commemorated in *Kniphofia Rogersii* E. A. Bruce, a new species discovered by him in Kenya. A man of a particularly modest and unselfish disposition, his loss is deplored by a large number of friends. C. E. C. FISCHER.

George Albert Boulenger.—Dr. G. A. Boulenger, F.R.S., a distinguished zoologist, died at St. Malo on November 23rd. 1937, at the age of 79. For a considerable period he was head of the Department of Reptiles, Batrachians, and Fishes at the British Museum (Natural History). When he left South Kensington Dr. Boulenger went to the Botanic Garden at Brussels and took up the study of roses in the Crépin Herbarium. His work entitled " Les roses d'Europe de l'Herbier Crépin " occupied two volumes of the Bulletin du Jardin Botanique de l'État between 1924 and 1931. He also published a Revision of certain sections of Asiatic roses in the same periodical. Boulenger's conception of the species of *Rosa* was a broad one, but it has much agreement with the views of Miss Erlanson, based on cytological investigations. He was in

regular correspondence with Kew and ever ready to assist in the identification of material.

New Conifer Names.—The following new names and combinations were found to be necessary during the preparation of the new edition of the *Handlist of Coniferae* which will appear shortly.

Picea Abies var. **acrocona** (*Th. M. Fries*) *Dallimore*, comb. nov. *P. excelsa* forma *acrocona* Th. M. Fries in Bot. Notiser, 1890, 256.

Picea Abies var. **brevifolia** (*Cripps ex Gordon*) *Dallimore*, comb. nov. *Abies excelsa* var. *brevifolia* Cripps ex Gordon, Pinetum, ed. 2, 8 (1875). *Picea excelsa* var. *brevifolia* (Cripps ex Gordon) Hornibrook, Dwarf and Slow-growing Conifers, 88 (1923).

Picea Abies var. **brevifolia** forma **albida** *Dallimore*, nom. nov. *P. excelsa* var. *brevifolia* forma *argentea* Hornibrook, Dwarf and Slow-growing Conifers, 89 (1923)—non *P. Abies* forma *argentea* Rehd.

Pinus Wallichiana *A. B. Jackson*, nom. nov. *P. excelsa* Wall. ex Lamb. Pinus, **2,** t.3 (1824)—non Lam. (1778). *P. Chylla* Lodd. Cat. 1836, 50, *nomen nudum. P. nepalensis* De Chambr. Trait. Arbr. Résin. Conif. 342 (1845)—non Forbes (1839). *P. Griffithii* McClelland in Griffith, Notul. **4,** 17 (1854), *nomen provisorium*, et Ic. Pl. As. **4,** t. 365 (1854), *anal. excl., nomen nudum*—non Parl. (1868). *P. Dicksonii* Hort. ex Carrière, Conif. 300 (1855), *pro syn.*

forma **zebrina** (*Croux ex Bailly*) *A. B. Jackson*, comb. nov. *P. Strobus excelsa zebrina* Croux ex Bailly in Rev. Hort. **61,** 393, fig. 101 (1889). *P. excelsa zebrina* (Croux ex Bailly) Beissner, Handb. Nadelholzk. 286 (1891). *P. nepalensis* var. *zebrina* (Croux ex Bailly) L. H. Bailey, Cult. Conif. N. Amer. 76 (1933).

For many years the Bhutan Pine was known as *P. excelsa* Wall. ex Lamb., but the rule adopted at Cambridge in 1930 rejecting all later homonyms necessitated a change of name owing to the existence of the earlier *P. excelsa* Lam. (=*Picea Abies* (L.) Karst.). The name *Pinus nepalensis* De Chambr. was then taken up, but it was overlooked that this name is itself a later homonym of *P. nepalensis* Forbes (Pinetum Woburnense, 34 : 1839)—a name of doubtful application.

P. Griffithii McClelland appeared only as a provisional name in the text, while the analyses on the plate cannot validate the name as McClelland himself says they belong to a different species. The epithet *Griffithii* cannot now be employed for the Bhutan Pine as Parlatore (in DC. Prodr. **16,** pt. 2, 411 : 1868) has validly published the combination *P. Griffithii* based on *Larix Griffithii* Hook. fil. & Thoms. (=*L. Griffithiana* Hort. ex Carrière). A new name for *P. excelsa* Wall. ex Lamb. is therefore required and *P. Wallichiana* is proposed.

Pseudotsuga taxifolia var. **pumila** (*Beissner*) *M. L. Green*, comb. nov. *P. Douglasii* var. *pumila* Beissner, Handb. Nadelholzk. 2 Aufl., 110 (1909).

Sequoia Wellingtonia var. **pendula** (*Carrière*) *M. L. Green*, comb. nov. *Wellingtonia gigantea* var. *pendula* Carrière in Rev. Hort. 1889, 545, fig. 137. *Sequoia gigantea* var. *pendula* Lavaltee, Arbr. Segrez. 271 (1877), *nomen*; Beissner, Handb. Nadelholzk. 165 (1891), 2 Aufl. 462 (1909); Bailey, Cult. Conif. N. Amer. 141 (1933).

A New Species of Delphinium from Afghanistan.—

Delphinium kabulianum *Akhtar*, sp. nov.: affine *D. Stocksiano* Boiss., sed floribus multo minoribus facile distinguitur.

Herba annua, erecta, pubescens, 3·1 cm. alta, ramis ascendentibus. *Folia* alterna, segmentis linearibus obtusis circiter 12·5 mm. longis et 1·5 mm. latis. *Racemi* elongati, terminales, laxi, 5–11-flori; pedicelli circiter 6 mm. longi, curvati. *Flores* bracteati, 1 cm. diam. horizontali sepalis patulis inclusis, 7·5 mm. diam. verticali. *Sepala* 5, luteo-alba, longitudinaliter pallide violaceo-striata, valvata, extra breviter patule pubescentia, abaxialia interdum in parte inferiore connata (?), lateralia patula, 8 mm. longa, 2·5 mm. lata; calcar fere erectum. *Corolla* primo pallide violacea, deinde luteo-alba; petala 4, 2 adaxialia calcarata, calcari 2·6 longo, 2 lateralia squamiformia. *Stamina* 20–25, inclusa, inaequalia; filamenta alba, basin versus dilatata; antherae leviter acutae, luteae. *Carpellum* solitarium: ovarium pubescens; stylus brevis, pubescens, teres. *Folliculus* cylindricus, 12·5 mm. longus, pubescens; semina 16, biseriata, brunnea, fere triangularia; testa coriacea, regulariter rugulosa.

AFGHANISTAN: near Kabul, about eight yards from the southern gate of "Bagh-a-Babur," on the left side of the road going out through the gate, growing wild on hillsides, flowering at the end of May, *S. A. Akhtar*, s.n. (typus in Herb. Kew.).

S. A. AKHTAR.

Botanical Magazine.—The fourth part of Vol. 160 was published on January 24th, 1938. The following plants are figured:

Rhododendron Cubittii Hutchinson (t.9502), a rare species from northern Burma; *Berberis chillanensis* var. *hirsutipes* Sprague ex Bean (t.9503), from the Andes of Argentina; *Hippeastrum Blumenavia* (C. Koch et Bouché ex Carr.) Sealy (t.9504), from Sao Paulo, Brazil (figured in Bot. Mag. t.5666 (1867) under the name *Griffinia Blumenavia*); *Camellia saluenensis* forma *macrophylla* Sealy (t.9505), from Yunnan, a large-leaved form raised by Mr. J. C. Williams from Forrest's seed no. 24090; *Allium Akaka* forma *major* Turrill (t.9506), from northern Persia; *Rhododendron aperantum* Balf. f. & Ward (t.9507), a dwarf, spreading shrublet from N.E. Burma; *Calamintha alpina* var. *orontia* (K. Maly) Hayek (t.9508), from Yugoslavia; *Viburnum foetidum* Wall. (t.9509), a shrub found in eastern Bengal, Assam and Upper Burma, also in Yunnan and Szechwan; *Homoglossum merianella* (Thunb.) Baker (t.9510), with flowers varying from brilliant orange to red, from the

Cape Peninsula ; *Eucalyptus coccifera* var. *viridifolia* Summerhayes (t.9511), a variety known only in cultivation but presumed to be, like the species, a native of Tasmania ; and *Senecio Tabacon* Turcz. (t.9512), a striking plant from the Andes of Colombia and Venezuela, with brilliant purple flowers.

The volume is dedicated to Mr. W. J. Bean, C.V.O., I.S.O., V.M.H., and the part under review contains a portrait of Mr. Bean and a dedication by the Royal Horticultural Society.

Swahili Plant Names.*—Time and again, knowing the native name for a tree or food-stuff, one has had considerable difficulty in identifying it, and could only do so, somewhat uncertainly, by correlating it with the native name in some other native language and then trying to find someone with sufficient botanical knowledge who knew that language. Those days, happily, have passed, and it is now possible to get plants identified by botanists in the various territories in East Africa. This task is now further simplified by Mr. Greenway's valuable piece of work, and to those of us who are not skilled botanists this book, with its simple descriptions of trees and plants, will prove extremely valuable and interesting.

One's curiosity, too, is excited by many of the native names. What folk-lore or legend, for instance, lies behind some of the names commencing with *Mla–* ? One knows that there is a legend behind the name *Kifabakazi* in Ganda, and one can only hope that this review may catch the eye of someone who someday will tell us how many of these trees or plants have got their names. In the same way, if the author at some future date should contemplate a second edition, perhaps he might consider the possibility of including the source from which the native name has come. *Kifabakazi* is a Ganda word, though, of course, it may also be the name for this tree in other Bantu languages, and there are other names which obviously are loan words, some of which we know or can guess ; others are more obscure.

There appear to be one or two slips or errors ; for example, it is difficult to see how such words as *Msjepasjepa* or *Mtasbihi* could be pronounced, whilst *Mdimu* is preferable to *Mndimu*, and *Mlimau*, which is recognised in F. Johnson's *Kamusi ya Kiswahili*, might have been included. *Mzizi* too is preferable to *Zizi*, a word with quite another meaning. On p. 22 there is a section under Mc. ; it is suggested that Mch. is more in conformity with orthodox orthography.

As regards the botany, the reviewer is not competent to speak, but he can say that, judged from the viewpoint of the average layman, he is impressed with the clarity with which the author has dealt with his subject and the general lay-out and arrangement in

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* "A Swahili Dictionary of Plant Names," by P. J. Greenway, F.L.S., Government Press, Dar-es-Salaam, 1937. Pp. xvi+112. Price 3*s*., obtainable from the Government Printer, Dar-es-Salaam.

this very handy little volume. The printing is excellent and the Amani Agricultural Research Station is to be congratulated on making the results of this comprehensive research available for general use.

E. B. HADDON.

Forest Bibliography.*—There are occasions when every scientific worker would fain turn back the wheels of time to that spacious age but a century ago when a man could possess an intimate knowledge of the whole realm of science. But such times are past. We must now contend with an ever-increasing spate of books and periodicals dealing with all branches of pure and applied science and compelling a specialisation, the field of which constantly narrows. The lot of the individual worker trying to keep abreast of new developments in his own branch of study is increasingly difficult. This provides a modern problem, the solution of which would appear to lie in the compilation of bibliographies and the publication of short abstracts of current work. Such undertakings can best be carried out in specialist institutions or departments of Universities.

Until recently British forestry, though similarly placed to other branches of applied science in this matter, was not specially catered for. The publication of a "Forest Bibliography," two parts of which have appeared already, by the Department of Forestry, University of Oxford, is, therefore, an event to be welcomed. The bibliography relates to periodicals, bulletins and other publications contained in the library of the Department of Forestry, where they may be consulted. Literature published prior to January 1934 is classified in chronological order under suitable subject headings such as "Seeds and Seedlings," "Natural Reproduction" and "Silvicultural Systems." Subsequent literature will be arranged under the decimal system recently adopted by the International Union of Forest Research Organisations. A collation of the two systems is given for convenience in the first number. Individual entries include an abbreviated title of the publication or periodical, a volume and page reference and a brief indication of the scope of the article.

The authorities of the Oxford Forestry School have earned the gratitude of British foresters for making available this bibliography, which was intended originally for private use only.

R. MELVILLE.

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